

Rock Products

DEVOTED TO
Concrete and Manufactured
Building Materials

Vol. VII

CHICAGO, ILLS., JULY 22, 1907

No. 1

CAROLINA PORTLAND CEMENT COMPANY

We are the largest distributors of Portland Cement, Lime Plaster, Fire-brick and General Building Material in the Southern States, and have stocks of Standard Brands at all of the Atlantic and Gulf Seaports, and at our interior mills and warehouses, for prompt and economical distribution to all Southern territory. Write for our delivered prices anywhere. Also Southern agents for the "Dehydratine's" waterproofing material. "Universal," "Aeme" and "Electroid" Brands Ready Roofing. Get our prices.

Charleston, S. C. Birmingham, Ala. Atlanta, Ga. New Orleans, La.

Vulcan Steam Shovels

Are digging Cement Rock without blasting and loading it on cars for the Burt Portland Cement Co. of Bellevue, Mich., for less than 12 cents per cubic yard, and they are operating the shovels at only half capacity. How much is it costing YOU? Better write today for information.

The Vulcan Iron Works Company,

129 Vulcan Place, Toledo, Ohio

UNION MINING COMPANY,

Manufacturers of the Celebrated

MOUNT SAVAGE
FIRE BRICK
GOVERNMENT STANDARD.

DEVOTE a special department to the manufacture of Brick particularly adapted both physically and chemically to

**Lime Kiln and
Cement Kiln
Construction**

Large stock carried. Prompt shipments made. Write for quotations on Standard and Special shapes, to

UNION MINING CO.,

Mount Savage, Md.

CAPACITY, 60,000 PER DAY.

ESTABLISHED, 1841.

Northwestern Clay Mfg. Co.

New Windsor, Illinois.

J. O. FREEMAN,
Genl. Mgr.

Sewer Pipe

An inquiry will
be answered.

Drain Tile.

Works: Griffin, Ill.

Ottawa Silica Co.'s Washed White Flint Sand

Is used for sawing stone in more than a dozen states. Cuts more and lasts longer than any other sand on the market. Unexcelled for Roofing, Facing Cement Blocks, White Plaster, etc. Freight rates and prices on application.

OTTAWA SILICA CO., . . . Ottawa, Ill.

DEXTER Portland Cement
THE NEW STANDARD

Sole Agents **SAMUEL H. FRENCH & CO.** Philadelphia



Phoenix Portland Cement UNEXCELLED FOR ALL USES.

Manufactured by

PHOENIX CEMENT CO.

NAZARETH, PA.

Sole Selling Agent WM. G. HARTMAN & CO.,
Real Estate Trust Building PHILADELPHIA, PENNSYLVANIA

"RELIANCE" BELT ABSOLUTELY BEST

Chicago Belting Company
MAKERS

67-69 South Canal Street,

SEND US YOUR SPECIFICATIONS.

CHICAGO, ILL.

ALMA
Portland Cement

STANDARD BRAND
OF
MIDDLE WEST.

Specially Adapted to all Reinforced Concrete and High-Class Work.

Alma Cement Co.,
WELLSTON, OHIO

Binns Stucco Retarder Co.

UHRICHSVILLE, OHIO

The largest manufacturer of retarder in the world.
Write us for prices.

BAGS FOR LIME AND CEMENT

We have recently purchased the factory of the Toledo Paper Bag Co. and have tripled the capacity, and are now in position to make prompt shipment of all orders with the best quality of paper. Prices quoted and samples mailed on receipt of inquiry.

The Urschel-Bates Valve Bag Co. Toledo, Ohio

**Improved Shield
Cement**

The Best Natural Cement
With 3 parts sand—425 lbs. 1 year.
Economical for Concrete.

LAWRENCE CEMENT CO.
OF PENNA.

STIEGFRIED, PA.

PAMPHLET FREE.



THE SIDEWALK BRAND

SUCCESSFULLY USED FOR TEN YEARS IN ALL KINDS OF CONCRETE WORK

Send for 72 Page Illustrated Catalog No. 25

MARQUETTE CEMENT MANUFACTURING CO.

Marquette Building, Chicago



A STANDARD PORTLAND FOR UNIVERSAL USE

PRESENT
DAILY OUTPUT
6,500 BARRELS
INCREASING
TO
17,000 BARRELS



PLANTS
AT
CHICAGO
AND
PITTSBURG

UNIVERSAL PORTLAND CEMENT CO.
CHICAGO PITTSBURG

Use "LIMOID" in CONCRETE and CEMENT MORTAR

FOR ITS

Waterproofing and Smooth Working
Qualities and General Economy

CHARLES WARNER COMPANY

Land Title Bldg., Philadelphia

Wilmington, Del.

"LEHIGH" PORTLAND CEMENT

High Tensile Strength, Finely
Ground, Light and Uniform in Color.
MANUFACTURED BY THE

**Lehigh Portland
Cement Co.**

ALLENTOWN, PA

Western Office:
725 Rockefeller Bldg.,
CLEVELAND, OHIO

Capacity, 8,000,000 Yearly.

Write for Catalogue.

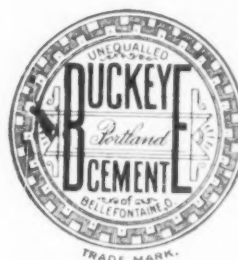


Manufacturers: Sales Office, Holland Building, St. Louis.

Buckeye Portland Cement Co.

ESTABLISHED 1888.

Manufacturers of the celebrated
"Buckeye" brand of



Portland Cement

"Buckeye" has stood the wear and tear in many
important places for the past fifteen years and
under the new process of manufacture is now
better than ever. :: :: :: :: ::

WE INVITE YOUR
CORRESPONDENCE.

Bellefontaine, Ohio.



ONE GRADE—ONE BRAND.

The Recognized Standard
American Brand.

General Offices: EASTON, PA.

—SALES OFFICES:—

German National Bk. Bldg., PITTSBURGH.
Builders Exchange, BALTIMORE.
Marquette Building, CHICAGO.

Builders Exchange, BUFFALO.
Board of Trade Bldg., BOSTON
St. Paul Bldg., NEW YORK.
Harrison Building, PHILADELPHIA.

Chicago Portland Cement Co.



MANUFACTURER OF . . .

"CHICAGO AA"
PORTLAND CEMENT.

We make one brand only.

The best that can be made.

HYDRATED PORTLAND LIME

IS IDEAL FOR

**Waterproofing
Concrete Blocks**

SAVES MONEY. TRY IT.



—FOR INFORMATION AND PRICES, WRITE—

CHICKAMAUGA CEMENT CO.,

Sole Manufacturers.

CHATTANOOGA, TENNESSEE

Rock Products

DEVOTED TO
Concrete and Manufactured
Building Materials

Volume VII.

CHICAGO, ILL., JULY 22, 1907.

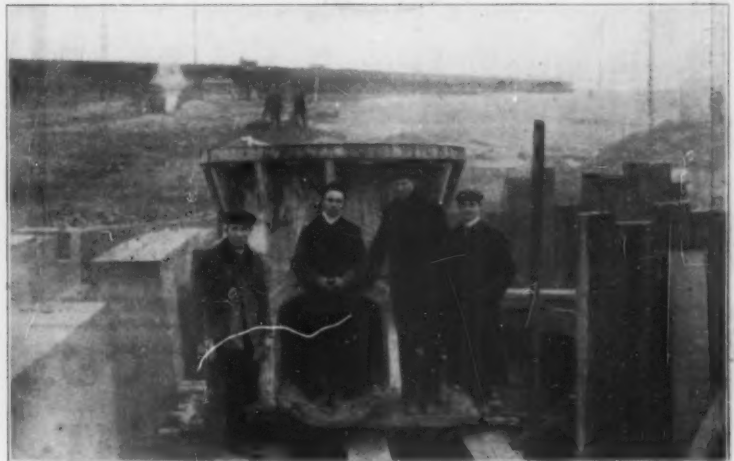
Number 1.

GREAT DOUBLE UNIT CRUSHER AT JERSEY CITY

(PROGRESS OF CONSTRUCTION CHRONOLOGICALLY ILLUSTRATED.)



FOUNDATION PIERS OF CRUSHER PLANT (January 16)



SETTING THE FIRST CASTING McCULLY CRUSHER (January 16)

The west shore of the Hudson river with its ridge of trap rock has always been a difficult problem for the railroads entering New York City from the West. The various lines have overcome this obstacle in a variety of ways: some by going around it, others by means of tunnels and one through an open cut. The Erie railroad has for years used a tunnel and has had to resort to troublesome makeshifts to handle its heavy suburban traffic during the rush hours every day. Plans for removing the roof from its tunnel have been under consideration for a number of years, but owing to the fact that the property on Bergen Hill is some of the most valuable in Jersey City, considerable objection was raised at the proposal, and the company finally decided to modify its plans and

now proposes to have only parts of the great cut opened and leave sections of the natural rock to support the important streets above, thus doing away with the construction of expensive bridges. Both freight and passenger traffic will be carried on through the new cut, while the old tunnel will be left intact, and will be used for freight service entirely.

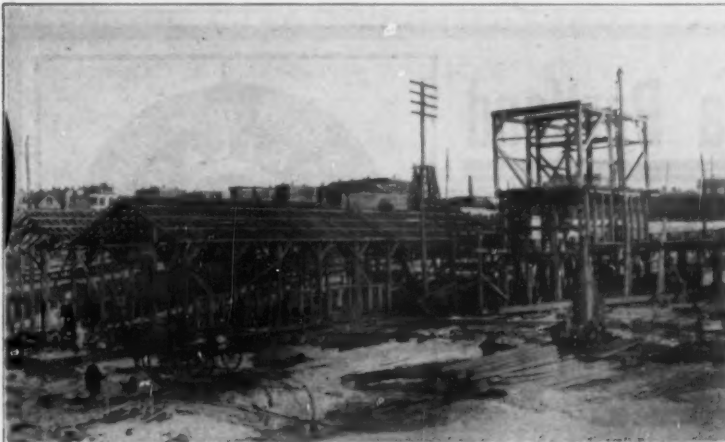
To the Power and Mining Machinery Company, of Cudahy, Wis., is due no little praise for the installation of what is undoubtedly one of the biggest plants for the crushing of rock for ballast purposes ever set up. This plant, consisting of two complete crusher outfits, being located in the heart of a great city and designed to crush trap rock, demanded the introduction of several unique features. It is to be

used for crushing the rock removed in making the four-track cut through Bergen Hill for the Erie railroad.

The entire work of construction on behalf of the railroad is under the direction of G. H. Burgess, engineer of terminal improvements for the Erie company. The resident engineer on the work is A. L. Moorshead, who has offices at 649 Summit avenue, Jersey City.

About 500,000 cubic yards of rock will be removed in making the cut which will pass through solid trap rock most of the distance of 4,000 feet. The contract for the work of excavating has been awarded to the Millard Construction Company, of Philadelphia, Pa.

Continued on Page 26.



SKELETON OF CRUSHER PLANT (February 15)



THE GREAT SEPARATING SCREENS (February 16)

N. R. 110/711 108 S. L.

Reputation Unrivalled

ONE BRAND ONLY
Sound, Strong, Uniform



ONE OF THE OLDEST AND THE BEST.

Vulcanite Portland Cement Co.

Flatiron Bldg., New York. Land Title Bldg., Philadelphia.

BANNER CEMENT CO., LOUISVILLE CEMENT.

Guaranteed that 90 per cent. will pass a
ten thousand Mesh Sieve.

WE SELL TO DEALERS ONLY.

GENERAL OFFICE: MASONIC TEMPLE, CHICAGO, ILL.

Improved Utica Hydraulic Cement

The finest ground and highest grade Natural Cement manufactured in the U. S. Every car tested by Robt. W. Hunt & Co., and their test furnished on every car shipped.

MEACHAM & WRIGHT CO. Sole Agents, Chicago.

A CONCRETE ROOF THAT DOES NOT LEAK



Medusa Water-Proof Compound

Makes all Concrete
Impervious to Water

The concrete roof of the Herbivora Building at the Cincinnati Zoo, shown in this illustration, was made absolutely dry by applying a cement mortar containing Medusa.

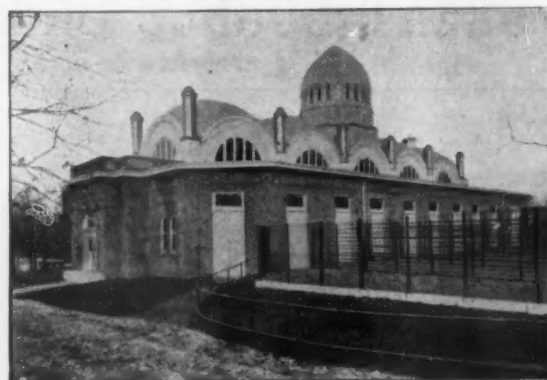
It Does Not Affect the Strength of Cement

Write for pamphlets describing its uses.

Sandusky Portland Cement Co.

SANDUSKY, OHIO

Beware of imitations and adulterated compounds that are sold for less than it costs us to make "Medusa"



The STATE OF MICHIGAN uses EGYPTIAN PORTLAND CEMENT for their Finest Work. WHY?

BECAUSE—

QUICK DELIVERY
LOW FREIGHT
PRICES TO YOUR
ADVANTAGE IN
STATES OF MICH.,
IND., OHIO, ILL.
AND WISCONSIN

By actual test they found it the best.
It is ground the finest.
Has an excellent color.
Has the highest tensile strength.
The Masons like Egyptian.
The Architects like Egyptian.
The Contractors like Egyptian, and
YOU will like EGYPTIAN PORT-

LAND CEMENT if you will give it a trial. The man who never investigates never knows. Write us.

THE BARTLETT CO., Main St., JACKSON, MICH.



Pennsylvania Portland

UNEQUALLED FOR HIGH
CLASS CONCRETE WORK

Pennsylvania Cement Co.

26 CORTLANDT ST., NEW YORK



Tell 'em you saw it in ROCK PRODUCTS.



**Strength
Durability
Permanence**

Not only laboratory tests, but results in actual work prove the high grade quality of

**Northampton
Portland Cement**

Especially adapted for Cement Blocks, Sidewalks, and all forms of concrete and re-inforced concrete construction.

Northampton Portland Cement Co.

No. 1 Madison Ave., NEW YORK.

Works at Stockertown, Pa.

Newaygo Portland Cement Co.

Sales Office: Michigan Trust Building

GRAND RAPIDS, MICH.

Write us for prices. Send us your orders.

Louisville Hydraulic Cement

is especially adapted for use in all classes of masonry construction and concrete foundations, and for all purposes where large masses of mortar or concrete are not exposed to the weather.

Ask for "Some Recent Tests," our latest booklet. You will find it interesting if you use cement.

Western Cement Co., Inc., 281 W. Main St., Louisville, Ky.

PATENT SOAPSTONE FINISH

PLAIN AND IN COLORS FOR WALLS AND CEILING

Patent Soapstone Mortar

Prepared in any Color for Laying Pressed and Enameled Brick, Stone Fronts, Terra Cotta, Chimneys, Fire Places, Etc.

The Dodge Blackboard Material or Artificial Slate.

The Potter Blackboard Material.

SOAPSTONE MICA. CONCRETE DRESSING.
CRUSHED, GROUND AND BOLTED SOAPSTONE.

AMERICAN SOAPSTONE FINISH CO.

C. P. DODGE, Proprietor.

CHESTER DEPOT, VT.

Tell 'em you saw it in ROCK PRODUCTS.

EDISON
Portland Cement Co.



85 per cent. thru 200
98 per cent. thru 100

**The Finest Ground Portland
Cement Manufactured**

"Neat tests are of less value than those of the briquettes made with sand and cement. The fineness of the cement is important, for the finer it is the more sand can be used with it."

[Abstract from "Specifications for Portland Cement," issued by the United States Navy Department, June 12, 1905.]

FINE GRINDING
OF
PORTLAND CEMENT
AND WHAT IT MEANS

For a proper understanding and full appreciation of the importance of fine grinding, it is necessary to explain that Portland Cement (as manufactured in the Lehigh Valley) is made from what is commonly understood as "Cement Rock," with the addition of sufficient limestone to give the necessary amount of lime. The rock is broken down and then ground to a fineness of 80 per cent to 90 per cent through a 200 mesh screen. This ground material passes through kilns and comes out in clinker. This is ground and that part of this finely ground clinker that will pass a 200 mesh screen is cement; the residue is still clinker. These coarse particles or clinkers will absorb water very slowly, are practically inert, and have very feeble cementing properties. The residue on a 100 mesh screen is useless.

Edison Portland Cement is ground 85 per cent through a 200 mesh screen,—10 per cent finer than other brands. This can be verified in any laboratory.

In a barrel of Edison Portland Cement, therefore, you get 85 per cent of Portland Cement and 15 per cent of clinker. In a barrel of other brands you get 75 per cent of cement and 25 per cent of clinker.

If you are buying a ton of coal, would you buy the coal containing 25 per cent of slate, or would you prefer the coal containing but 15 per cent of slate?

If, instead, you are buying iron ore, would you not give preference to ore that contained 10 per cent more units of iron?

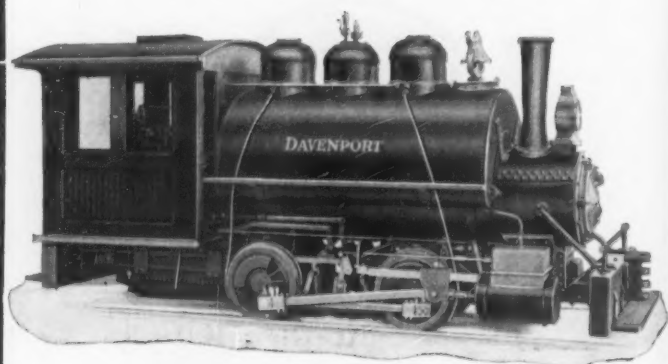
Another point is worth considering and that is that the Edison Portland Cement Company make but one brand or quality, and that is the best.

SALES OFFICES:

Real Estate Trust Bldg., Philadelphia.
Machesney Bldg., Pittsburgh.

St. James Bldg., New York.
Union Bldg., Newark, N. J.

Do You Have Cars to Haul?
The Davenport Locomotive
 Will Save Money



Special Designs for Special Purposes
 Any Size, Any Gauge, Any Weight
 Write for Prices and Particulars

DAVENPORT LOCOMOTIVE WORKS
 DAVENPORT, IOWA

"THE QUARRYMAN FINDS A NEW STANDARD
 OF QUALITY IN INDEPENDENT"

INDEPENDENT POWDER
 COMPANY OF MISSOURI
 HOME OFFICE · JOPLIN · MO ·
 FACTORY · · · JOPLIN · MO ·
 GENERAL SALES OFFICE · · ·
 901 TIMES BLDG · ST. LOUIS · MO ·



Amatite
ROOFING

**Nothing for Necessities—
 Nothing for Repairs**

There is no LABOR cost, because Amatite is so easy to lay that you can do the work yourself.

The first cost is the only cost—THE FINAL COST.

Amatite is the only Ready Roofing embodying every good point that a roof should possess.

Heat and cold, rain and snow, acids and chemicals do not affect it, and in addition to this its mineral surface makes it one of the best fire retardants known. It is roofing at its best.

When you buy Amatite everything is included in the **FIRST COST**.

There is no cost for **EXTRAS**, because nails and cement for laps are furnished free with every roll.

There is no **MAINTENANCE** cost, because its mineral surface makes painting and coating absolutely unnecessary.

There is no **REPAIR COST**, because Amatite is so constructed that it needs no attention after it is once laid on the roof.

Free Sample

A Booklet telling more about it and a Free Sample will be sent upon request. Send at once and see for yourself how much better Amatite is than the "paint me every two years or leak" roofing.

Barrett Manufacturing Company

New York Chicago Cleveland Allegheny Kansas City St. Louis
 Boston Minneapolis Philadelphia New Orleans Cincinnati London, Eng.

Tell 'em you saw it in ROCK PRODUCTS.

LION FUZES AND BLASTING MACHINES

ARE THE BEST



If you do not fire your blasts by electricity, you should send for the booklet

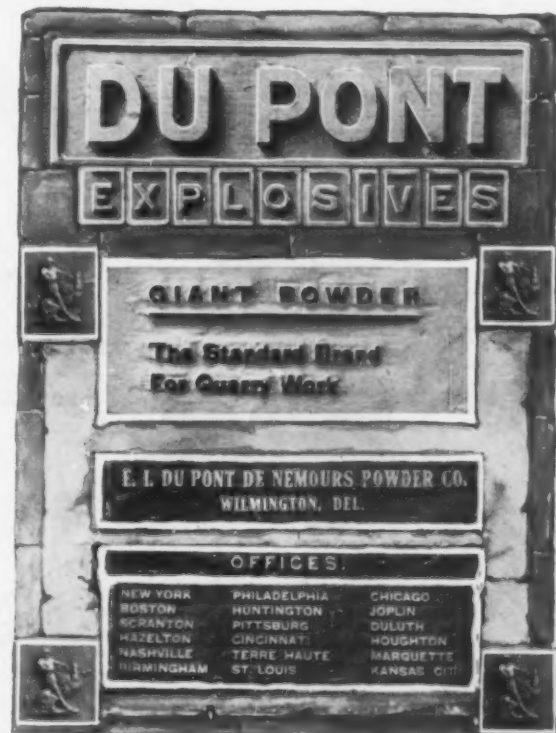
"FIRING BLASTS
BY ELECTRICITY"

Which tells all about this method. If you are already using fuzes, you should have the book anyhow, as it contains many valuable hints. Sent free.

The AETNA
POWDER
COMPANY

No. 1, Capacity, 8 Holes
No. 2, Capacity, 25 Holes
No. 4, Capacity, 50 Holes

143 Dearborn Street, CHICAGO



The "LITTLE IMP" and "LITTLE JAP" HAMMER DRILLS

As they have no mounting or chuck, nine-tenths of the working time is actual drilling. Requiring only about one-half the air used by Standard drills, the investment for drills and compressor plant is only one-half that required for standard drills of equal capacity. Breaking and dulling of steels about half that with equivalent piston drills. Equal the work of six to ten hand drillers.



The "Little Imp" is a valveless tool and the "Little Jap" is of the valve type. Both use either plain steels, hexagon or cruciform, or shank-and-collar steels. Like other Ingersoll-Rand drills, they are built to stand up to the work under all conditions; they embody the distinctive Ingersoll-Rand characteristics of high power, unequaled capacity, great endurance and unsurpassed economy.

AIR COMPRESSORS CHANNELERS
STEAM, AIR and ELECTRIC-AIR ROCK DRILLS

INGERSOLL-
RAND CO.

11 Broadway, NEW YORK

Chicago
Cleveland
Butte
Denver

Philadelphia
Birmingham
Houghton
Los Angeles

St. Louis
Pittsburg
San Francisco
Salt Lake

El Paso
Boston
Seattle
Montrea



"Little Imp" working on a block hole, using dust deflector.

The opposite illustration shows the "Little Jap" drilling a pop hole.

P. 30

HIGH GRADE

FIRE BRICK

For Cement Works, Lime Kilns, Cupolas, Steel and Iron Works of every description :: :: ::

Louisville Fire Brick Works, K. B. GRAHN, Prop., Highland Park, Ky. P.O.

HENRY S. SPACKMAN ENGINEERING CO.

Official Chemists, National Association of Manufacturers of Sand Lime Brick.

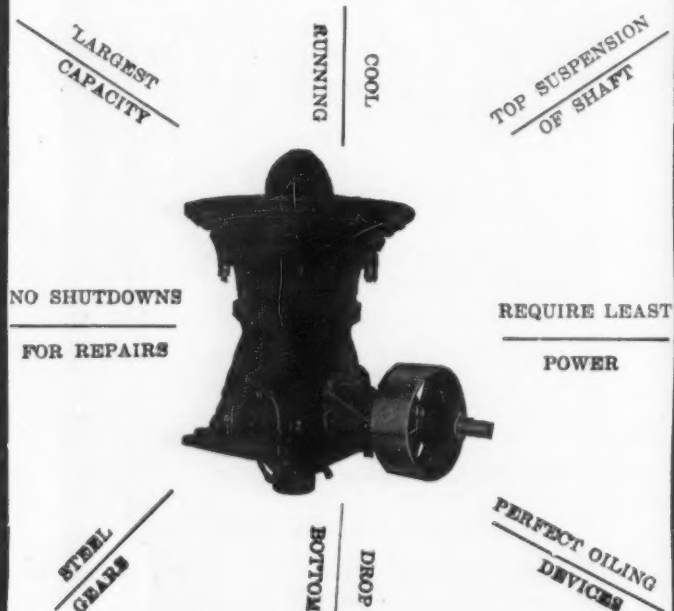
HENRY S. SPACKMAN, Pres. Dr. E. W. LAZELL, Vice Pres.
H. O. DUELL, Consulting Engineer.

Lime and Sand-Lime-Brick plants designed, constructed and superintended. Established plants examined and improved. Properties investigated and Physical and Chemical reports made. Chemical and Physical reports of all building material a specialty.

Office and Laboratories, 42 N. Sixteenth St. PHILADELPHIA, PA.

McCully Gyratory Crushers

You See Them Everywhere



(Write for Catalog No. 4.)

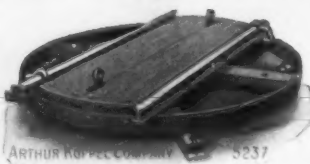
Power and Mining Machinery Co.

Cudahy, Wis.
(SUBURB OF MILWAUKEE)

KOPPEL

TURNTABLES FOR INDUSTRIAL AND PORTABLE TRACK

We Make other Types of Turntables



Cars Built to Order

For Mines, Quarries and Stone Crushing Plants

[IN STOCK]

Rails, Steel Ties, Portable Track Switches, Frogs, Turntables and Dump Cars of Any Type

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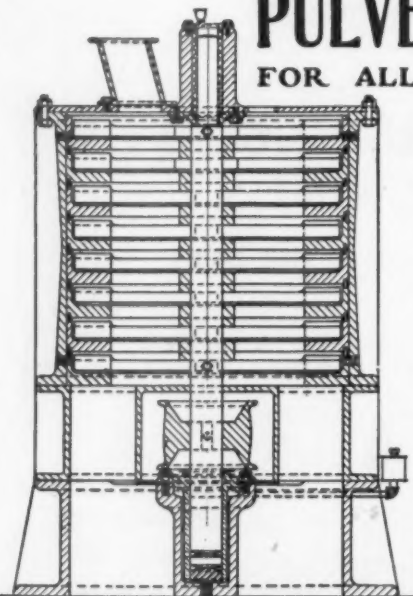
Arthur Koppel Company

1622 Machesney Bldg.,
151 Morris Bldg.,
1641 L. Monadnock Bldg.,
1516 Chronicle Bldg.,

Pittsburg
New York
Chicago
San Francisco

Works at
KOPPEL
P. O. Address, HOMEWOOD
Beaver County, PA.
Trade-Mark.

PULVERATORS FOR ALL MATERIALS



The accompanying cut shows our No. 4 PULVERATOR which was designed to reach the largest scope of what is required in the grinding of any kind of material from Glue and Bones to ROCKS of any kind.

This mill will take in pieces as large as a man's fist and can be regulated to grind the same to granulations or to a powder.

It is certainly the best "ALL-AROUND" mill in the market. Please write for further information and our latest illustrated catalogue "A."

Engineers and Builders of machinery for the reduction and drying of all kinds of materials.

J. R. ALSING CO.

R. F. ABBE, Prest.

Main Office: 136 Liberty Street, NEW YORK
Dept. "R"

Economy Dictates

that the jaw-plates, cheek-plates, cones and concaves of your crushers should be made of

"Taylor-Made" **Manganese Steel** "Taylor-Made"



The actual ratio of wear in "Taylor-Made" plates, as compared with other castings, has been proved by large users in hundreds of cases to warrant their use.

"The Reason's in the Steel"

We shall be pleased to give you further information.

Taylor Iron & Steel Co.

High Bridge, N. J.

Tell 'em you saw it in ROCK PRODUCTS.

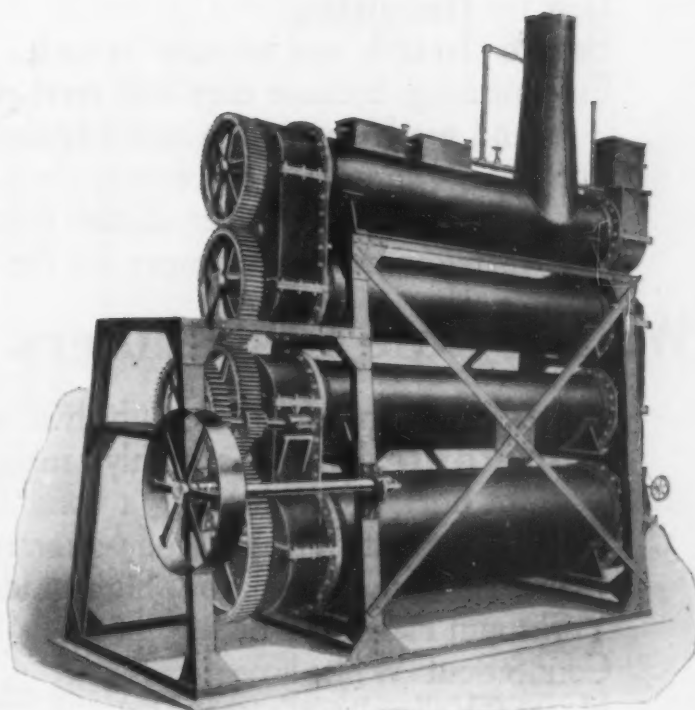
Hydrate Your Lime

"THE KRITZER WAY"

We'll be glad to tell you all about it. It won't cost you more than a postage stamp to find out. The man who never investigates new things never accomplishes much in this world. It's the man who is up and doing and gets there before everybody else does—he's the man who reaps the harvest. There will always be money in hydrated lime, because hydrated lime is as staple as flour; but the **men who get into the field early are the men who are going to get the BULK of the trade.**

We are makers of machinery for hydrating lime. We will furnish you anything from a sprocket wheel to a complete plant, and guarantee whatever you get from us to be the best of its kind in the country. We have the most up-to-date and successful method. Our machinery is tried and tested, and we've had more real experience in this business than all our competitors put together. That's a broad statement, eh? Well, we can prove it.

YOU can't afford to wait. Write us now.



The Kritzer Continuous Hydrator.

We've an interesting little booklet that we'd like to have you read.

THE KRITZER COMPANY

WESTERN AVENUE AND SEVENTEENTH STREET

CHICAGO, ILL.

Tell 'em you saw it in ROCK PRODUCTS.

WHY?

Why are the Palmer Lime & Cement Co.'s Limes in demand?
Why are they used in all principal buildings in New York, Brooklyn and neighboring cities?

Because they are the **best**.

Best for **finishing**.

Best for **brick and stone work**.

For finishing, because they will **not** pit, will **not follow** the trowel, and work **smooth and clean**.

For **brick and stone**, because they are strong, large yielders, and will lay **more** brick per barrel than any other lime on the market, therefore they are cheaper for the mason's use.

We are Sole Distributers of the—

Cheshire finishing lime, which is well known and always A 1.

Bellefonte Lime, a highly caustic chemical lime, and a large yielder for brick work, making a bond almost equal to cement mortar.

Palmer select finishing, fully guaranteed.

Palmer No. 1 common, high grade for brown and scratch coats.

Yorktown Heights lime

Connecticut White lime

Hoosac Valley lime

Hadsell White lime

} Especially adapted to brown and scratch coats.

And—

Palmer Chemical Lime, which has a universal reputation, analyzing over 99 per cent Pure Carbonate.

Alsen's American Portland Cement, for Long Island.

We **succeed** in pleasing our customers.

The Palmer Lime & Cement Co.

FOSTER F. COMSTOCK, Manager

Telephone 6610, 6611, 6612 Cortlandt.

149 Broadway, NEW YORK CITY

Tell 'em you saw it in ROCK PRODUCTS.

Why don't you hydrate
your lime?
You'll have less competition
and more profits.
Use the

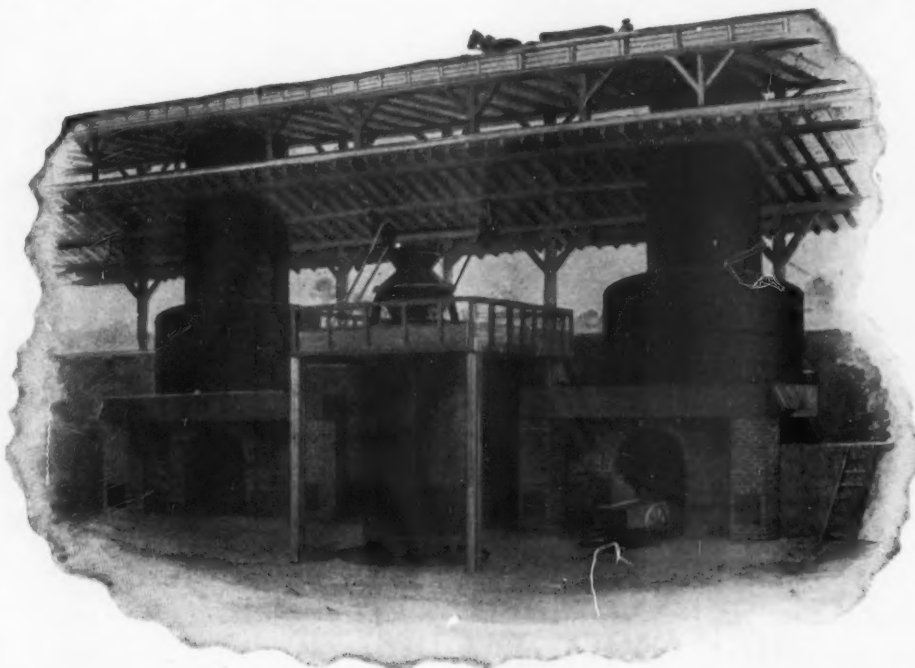
CLYDE HYDRATOR

and get the most profits.
Got our new booklet?
It's very interesting.
Ask for it.

CLYDE IRON WORKS
Duluth, Minn.

Gas Producer Plant of the New England Lime Co., Canaan, Connecticut.

PRODUCER GAS
Makes the Best Lime
It increases the
Capacity of a Plant
and Reduces the
Fuel Bill



The Total Cost of
This Installation
Will be Paid for by
the Saving Effected
During the First
Year of Operation

"We have equipped two plants for above company and are now equipping a third."

MORGAN CONSTRUCTION CO., Gas Producer Dept., Worcester, Mass.

?

THE IMPORTANT QUESTION

A RELIABLE PAPER BAG

THAT will stand severe handling, and arrive at destination without damaged contents, has been the one desire of the cement and hydrated lime manufacturer. We have solved the problem and can convince you with the first order.

The West Jersey Paper Mfg. Co.

Front and Elm Streets

CAMDEN, N. J.

W. B. E.
TRADEMARK.

Bitumen Emulsion
A PERFECT WATER-PROOFING
for CEMENT or CONCRETE WORK

Theodore F. Koch
79 Dearborn Street,
Chicago, Ill.

Phone Central 1479

W. B. E. Bitumen mixed with Cement mortar and correctly applied produces results and advantages as follows: 1. Makes walls or floors absolutely dry and watertight against pressure. 2. Is acid proof (except against concentrated acids of the strongest kinds.) 3. Can be applied in freezing weather. 4. Resists heat well, almost to red hot. 5. Sets well, does not crack nor shale off. 6. Destroys and prevents fungus in damp basements and cellars. 7. Adheres very well to clean rough walls of brick, stone and concrete. 8. Can be applied as plaster, against walls through which water is oozing out. 9. Prevents efflorescence or alkali on walls.

Is a Money-Saver for Builders and Contractors

SATISFACTION GUARANTEED

Address

Theodore F. Koch

Importer and Sole U. S. Agent.

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CHARLES W. GOETZ LIME & CEMENT CO.

MANUFACTURERS OF AND DEALERS IN

**Glenwood Lime, Banner
Brand Louisville Cement,
Portland Cements and
Building Materials.**

St. Louis, Mo.



CARLON WALL PLUG

for Fastening Interior Work on

Brick, Stone or Cement Block Wall

The object of this Wall Plug is to provide a cheap, simple and efficient device which can be arranged between building blocks or bricks, during the construction of the wall, and provide a suitable pocket into which the nail or spike may be driven.

It is of such a character that it can be used in connection with either brick or stone, and one that can be used equally as well with artificial or natural stone, but is especially adapted to cement block work. It is made in such a manner that, when once inserted in the wall, all danger of pulling out or working loose is entirely avoided.

PAT. DEC. 11-1906

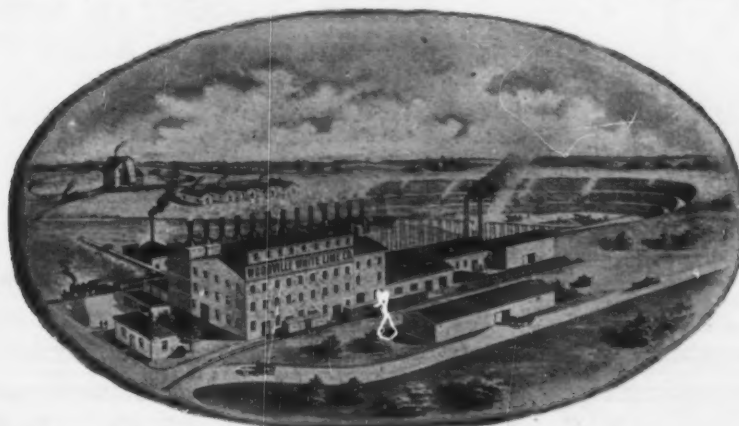
For samples, prices or further information, address

CARLON CONSTRUCTION CO.

Oskaloosa, Iowa

Tell 'em you saw it in ROCK PRODUCTS.

Our High Grade Products



Largest Capacity of Hydrated Lime in the U. S.

Sales Agents **EDISON PORTLAND CEMENT**

Manufacturers of and Wholesale Dealers in

LIME, LUMBER, SEWER PIPE AND A FULL LINE OF BUILDERS SUPPLIES

THE WOODVILLE WHITE LIME CO.
TOLEDO, OHIO



CEMENT-KILNS

Lined
with Our

BAUXITE

Lining
Blocks

In hot zone and our special fire-clay blocks throughout the rest of Kiln can be run from three to four times as long as Kilns lined with the very best fire-clay linings. Write for booklet describing Bauxite Linings for Portland Cement Rotary Kilns.

Fire-Brick for Lime Kilns

We number among our customers many of the large Lime and Gypsum Manufacturers of the Country.

Sewer Pipe, Wall Coping, Hollow Tile
Fire Proofing, Flue Lining.

Laclede Fire-Brick Manufacturing Co.

ST. LOUIS, MO.

Tell 'em you saw it in ROCK PRODUCTS.

DOES NOT DETERIORATE WITH AGE.



WILL NOT SLACK. ALWAYS READY FOR USE.

Excelsior Hydrated Lime

A PRODUCT OF MERIT.

The best prepared Lime in the market. Is superior to hot Lime for all purposes. Will not deteriorate. Absolutely pure and free from foreign ingredients. Successfully used for years by the largest users of Hydrate in the country.

SEND FOR PRICES.

MADE ONLY BY

The Cleveland Builders Supply Co. Cleveland, O.

Try us on your Portland Cement requirements

The Hoosac Valley Lime & Marble Co.

=====ADAMS, MASS.=====

Manufacturers of

....High-Grade Finishing Lime....

Noted For Its Quick and Even Slacking.

Now in Use in Some of the Largest Buildings Being Erected in New York City.

THOS. D. CONNORS, President.

Telephone
Connection

New York Office: 1123 Broadway.

Farnam "Cheshire" Lime Co.

OF CHESHIRE, MASS.
MANUFACTURERS OF THE

Celebrated "Cheshire" Finishing Lime.

Well known throughout New York and the Eastern States as the finest finishing lime manufactured. The special feature of this lime is its quick and even slacking, thus preventing any cracking or checking when put on the wall. It is the best lime used in the country today for all

HIGH GRADE FINISHING WORK

Selling Department, 39 Cortlandt St., N. Y., C. J. CURTIN, Pres't.

Red, Brown,
Buff and BlackMORTAR
COLORS

The Strongest and Most Economical in the Market.

Our Metallic Paints and Mortar Colors are unsurpassed in strength, fineness, and body, durability, covering power and permanency of color. Write for samples and quotations.

CHATTANOOGA PAINT CO., CHATTANOOGA, TENNESSEE.

"IF IT IS

LIME

WE MAKE IT."

Lump - Barreled - Hydrated Ground.

STRONGEST IN OHIO.

We are not connected with any Trust or Combination.

WRITE US
PHONE US

The Scioto Lime and Stone Company, Delaware, Ohio

Tell 'em you saw it in ROCK PRODUCTS.

The **Strongest White Lime**

ON THE MARKET

Uniform Quality

Finest Grain

The American Clay Machinery Co.

WILLOUGHBY, OHIO

May 16, 1906.

The Mitchell Lime Co.,
Mitchell, Ind.

Dear Sirs:-

Replying further to your favor of the 8th inst requesting us to advise you the result of practical test of your lime in the manufacture of sand-lime brick. We are pleased to advise you that the lime hydrated easily and the brick made from it were first-class in every respect. We have forwarded some samples of it to Mr. Elkus of the Indianapolis Composite Brick Co. and he can probably advise you further.

Very truly yours,

The American Clay Machinery Co.
by W. J. Burke.

MITCHELL LIME COMPANY

MITCHELL, INDIANA

WESTERN LIME CO.

HUNTINGTON, INDIANA

MANUFACTURERS OF

LUMP LIME

ALSO, DIAMOND BRAND SUPERIOR WHITE FINISH

A HYDRATED LIME

AND A GROUND AND FERTILIZER LIME

Capacity 4,000 barrels or 10,000 bushels per day. Capacity of Hydrated Lime, 120 tons per day. Our LUMP LIME as well as our HYDRATED LIME is the very best obtainable for all purposes for which a good lime is needed in erecting buildings. Our HYDRATED LIME is absolutely the best finishing lime on the market.

FOWLER & PAY,

Brown Hydraulic Lime, Austin Hydraulic Cement, Jasper Wall Plaster, Brick, Stone.

CEMENT WORKS: Austin, Minn.
PLASTER MILL: Ft. Dodge, Iowa.
WAREHOUSE: Minnesota Transfer.

MANKATO, MINN.



ASH GROVE
WHITE LIME ASSOCIATION
MANUFACTURERS OF
**High Grade
White Lime.**
KANSAS CITY, MISSOURI.

The Kelley Island Lime and Transport Co.

CLEVELAND, OHIO.

Tiger Brand White Rock Finish the best known and smoothest working Hydrated Lime manufactured.

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THE LARGEST LIME MANUFACTURERS IN THE WORLD.

A. & C. Stone & Lime Co.

MANUFACTURERS OF

CRUSHED STONE AND WHITE LIME

TOTAL CAPACITY CRUSHED STONE 4000 TONS DAILY.

Plants: GREENCASTLE, IND.
RIDGEVILLE, IND.
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LIME KILNS AT
PORTLAND, IND.

General Office: 17 N. Penn. Street
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Tell 'em you saw it in ROCK PRODUCTS.

HERE IT IS

The All Steel Wheelbarrow for Feeding
Power Driven Concrete Mixing Machines
Has Not a Single Rival on the Market



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Manufactured by

**The Ohio Steel Wheelbarrow
Company**

No. 25-35 SOUTH ST. CLAIR STREET
TOLEDO, OHIO, U. S. A.

Modern Grinding Machinery

KOMINUTERS for granulating
TUBEMILLS for pulverizing

Davidson Tubemill especially
adapted for Sand-Lime
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Silex Linings for Tubemills
Best Quality Dana Flint Pebbles
Forged Steel Balls

F. L. SMIDTH & CO.

ENGINEERS

41 Cortlandt St.,

NEW YORK

MACHINERY

FOR

Industrial Plants



We manufacture machinery for transmitting power, and for elevating and conveying materials in and about cement plants, rock-crushing plants, lime plants, mortar works, plaster works, and other industries.

We manufacture screw conveyors, belt conveyors, and all sorts of chain and cable conveyors, for handling rock, lime, sand, etc.

We manufacture elevators, also, for handling the same kinds of material.

Our lines include shafting, couplings, bearings, collars, pulleys, gears, rope sheaves, sprocket wheels, elevator buckets and bolts, steel elevator casings, etc.

We have our own foundry, sheet metal department and machine shop. We employ first-class help in all departments and use high-grade materials.

When you are in need of anything in our line, try us.

Catalogue No. 28.

H. W. Caldwell & Son Co.

17th St. and Western Ave., Chicago

95 Liberty St., New York City
Woodward, Wight & Co., Ltd., New Orleans, La.

The Bates Engineering and Construction Co.

DESIGNERS AND BUILDERS OF

Lime Kilns and Complete Lime Plants

Plans and estimates furnished for coal, wood or producer gas kilns. Designers and builders of the only known kiln that will burn a soft stone economically. Sixteen years' experience. Contracts taken in any part of the country. :: :: ::

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Rockland-Rockport Lime

IS BETTER THAN THE BEST

That's the reason we sold over 60 per cent of the lime consumed in New York City last year. Quality—in sand capacity, hard walls, white finish. Economical—from start to finish.

ROCKLAND - ROCKPORT LIME CO.

FULLER BUILDING, NEW YORK.

Tell 'em you saw it in ROCK PRODUCTS.

PULVERIZED FUEL COMBUSTION

IN CEMENT MAKING

THE conditions required for the development of the highest efficiency in the burning of coal are—the complete oxidation of each carbon particle to CO_2 and the absence of any excess of air over 150 cubic feet per pound of carbon.

To reach this efficiency it is essential that the supply of air necessary for the combustion of each carbon particle shall surround it and shall have free access to its surface.

The Aero Pulverizer receives any grade of coal, grinds it to an impalpable powder, intimately mixes the powder with the amount of air theoretically required for perfect combustion and delivers the mixture to the furnace, where smokeless combustion at the highest efficiency results.

Coals containing an ordinary amount of moisture can be handled by the Aero without previous drying.

An entire pulverizing plant is concentrated in one machine, saving in investment, space required and power consumed.

SEND FOR BULLETIN 10.

THE AERO PULVERIZER CO., 82 Wall Street,
NEW YORK.



Rhoads Cement Mill Belt Dressing

Do your belts transmit full power? Are they flexible and clean and clinging? A dirty, lumpy surface will form air pockets and slip, especially if the belt is dry and stiff.

Our Cement Mill Belt Dressing is especially compounded to avoid caking, and it gives the belts a fine pliability and cling. We know of no other so good.

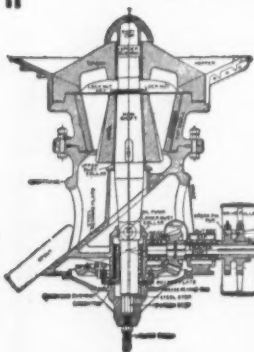
Write us for price and free sample for test.

J. E. RHOADS & SONS

Makers of Leather Belting

PHILADELPHIA: 12 N. Third St. NEW YORK: 40 Fulton St. BOSTON: 105-111 Summer St.
Hamblet & Hayes Co., Eastern Agents. Factory: WILMINGTON, DEL.

THE AUSTIN GYRATORY CRUSHER IS THE ONLY ONE HAVING AN AUTOMATIC OILING SYSTEM.



The strain on the bearings of a gyratory crusher is so great that if dust reaches them or if imperfectly lubricated they are certain to be quickly destroyed and the machine laid up for repairs. The bearings of the "Austin" are enclosed in a double chamber—absolutely dust proof—and are lubricated by a constant circulation of live oil forced through the main eccentric bearing—which is the life of the machine—by an automatic pump operated directly by the gyratory movement of the main shaft. The lubrication must be perfect because the flow of oil is constant and positive.

In all other gyratory crushers there is only the discharge diaphragm to separate the dust from the bearings and gears, and a side door opens directly into this receptacle readily and destroys the gears.

Immediately below the crushing head, in the "Austin" is placed the discharge diaphragm with dust collar the same as in any other gyratory crusher. Below this partition is a second diaphragm also provided with dust collar around the shaft and a dust cap covering the pinion, contained in no other crusher, enclosing the bearings in a double dust proof chamber and making it simply impossible for dust to reach the bearings.

At the bottom of the frame in the "Austin" is an oil cellar which is filled with oil to the level of the center of teeth in the main gear.

An automatic pump draws pure oil from this cellar, forces it through the eccentric and counter shaft bearings and any oil thrown from the teeth of the driving gear is caught by the cap and carried back to the cellar.

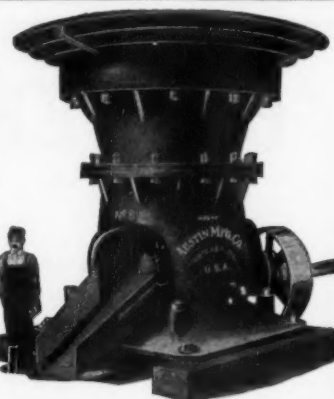
At the bottom of the cellar is a drain by means of which the impure oil can be removed insuring absolutely perfect lubrication because every part of the bearings operates continuously in a bath of pure oil.

One never has to expose the bearings of the "Austin" to dust when in operation. Fill the oil cellar to the required height and the machine must oil itself since no oil can escape from the oil cellar and therefore maintains a constant level.

Sizes for all requirements.

We are the world's largest builders of rock and earth handling machinery.

Catalogues of all departments on request.



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New York Office, Park Row Building

Does Quality Appeal to You?
Does Prompt Service Appeal to You?
Does Reliability Appeal to You?

Then Buy

**Your Stucco and
Wall Plasters of**

The

American Gypsum Co.,

Manufacturers of

**High Grade Stucco. "Anchor" Cement Plaster.
 "Anchor" Wood Fibre Plaster.
 Superfine Calcined Plaster.**

General Offices, Garfield Building, CLEVELAND, OHIO.
 Mills, Port Clinton, Ohio

STURTEVANT GRINDING MILLS

SIX KINDS

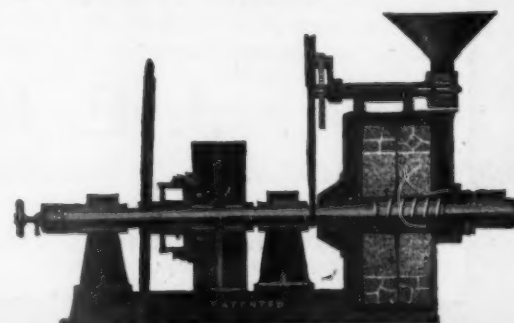
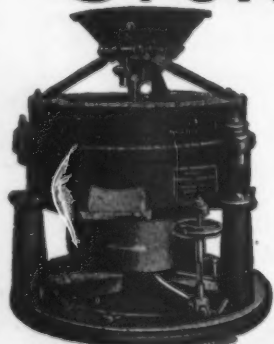
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Hard, Soft or Medium Rock.
Produce a finished product
without screens.

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OF

ROCK AND ORE REDUCING MACHINERY.

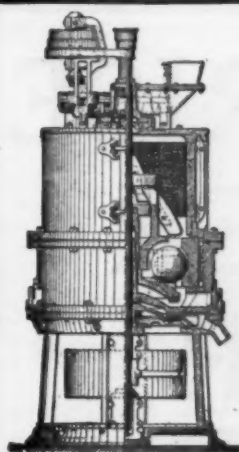


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108 CLAYTON STREET.

BOSTON, MASS.

Tell 'em you saw it in ROCK PRODUCTS.



Fuller-Lehigh Pulverizer Mill

The Best Pulverizing Mill Manufactured

Exhaustive tests in all departments, in competition with the most approved grinding machines in use, have demonstrated the superiority of our machine

OUR CLAIMS:

Greater Output

"With the four we are now ordering we will have in use 16 Fuller Mills in all, and I think you can hope to get orders from us within the very near future for quite as many more."

Better Fineness

Few extracts from letters received from users

"We have to say for your Fuller Mill that it is unqualifiedly the best grinding device we have ever tried on our lime rock and eminently satisfactory to us."

Fewer Repairs

"We are pulverizing with one Ball Mill and four Fuller Mills sufficient raw material to produce nearly 1200 barrels of clinkers per day, which record I believe can not be approached by any other mill on the market."

Dustless

If interested, write us for further information

LEHIGH CAR, WHEEL & AXLE WORKS, CATASAUQUA, PA. U. S. A.



ROTARY DRYERS

WE MAKE THE LARGEST VARIETY IN THE WORLD. MORE THAN 200 NOW IN USE NOW USED IN THE GOV. COAL TESTING PLANT, GOLD MEDAL AT ST. LOUIS. THE C.O. BARTLETT & SNOW CO. CLEVELAND OHIO U.S.A.

A Prominent Engineering Co.

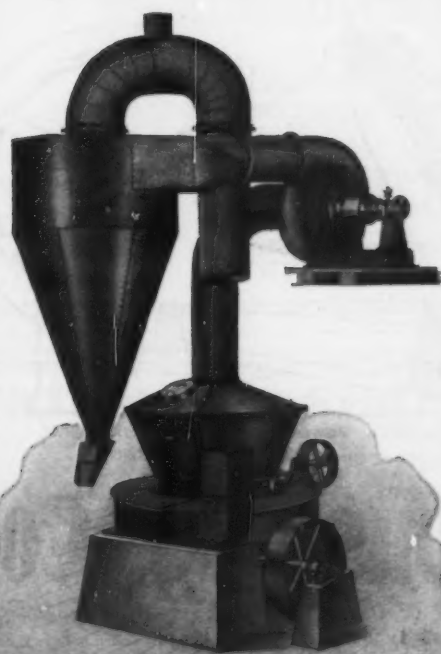
Writes as Follows:



"We have arranged to drive two mills with two of the three sets of gears we are ordering, leaving one set for stock. You furnished the Peninsular Portland Cement Co. with gears some time ago, which are running very satisfactorily and we want duplicates of those gears for the Western Portland Cement Co."

"We had a great deal of trouble with gears on these drives before we got your last set of gears. Therefore please be sure we get the best gears you can make."

R. D. Nuttall Co.
Pittsburg, Pa.



USE THE COUPON

SEVENTY THOUSAND DOLLARS SAVED

In ONE YEAR For One Customer

By use of the

Raymond System of Air Separation

"We may not be able to do as much as that for you, but if you grind to powder in your factory or mill any material, it is probable that we can show you under our methods a substantial saving. You may not realize, may never have figured, how much you could save if you eliminated all the waste of material in your grinding process, if you were to produce finer powder, if you were to dispense with extra auxiliary machinery, if you did away with all bolters and screens, which are not only expensive under first cost but are costly to maintain, replace and keep in repair, to say nothing of cost of extra and under our system, unnecessary labor. We have successfully solved the pulverizing problem for more than two hundred of the largest concerns in the world."

The figures we give at the head of this advertisement represent our success in one instance. They are the customer's figures, not ours. Give us some of your "hard nuts" in the grinding question to crack. It will cost you nothing to confer with us. But first write for our book,

"MAKING AIR MAKE MONEY"

It will tell you more than we can tell you in this limited space.

RAYMOND BROTHERS IMPACT PULVERIZER CO.,
141 Laffin St., CHICAGO



SEND THIS COUPON, TEAR OFF AND MAIL

RAYMOND BROTHERS IMPACT PULVERIZER CO.
141 Laffin St., Chicago

Please send your book

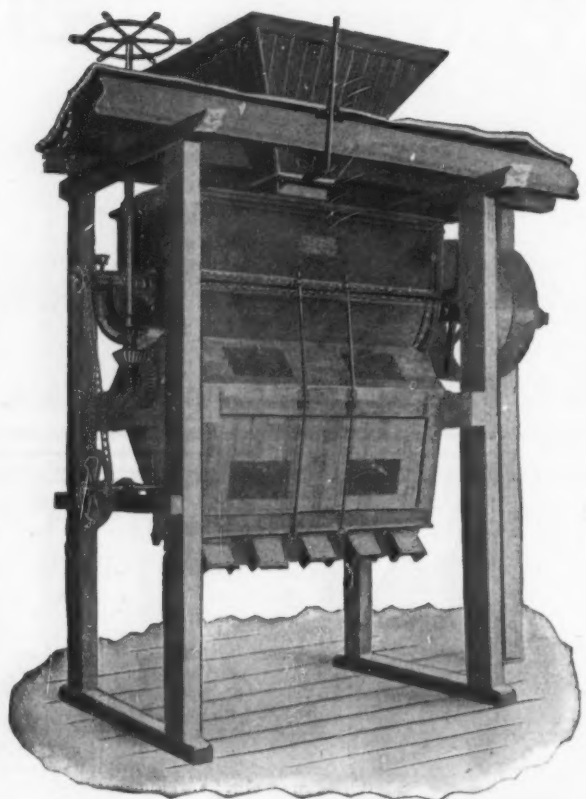
"MAKING AIR MAKE MONEY"

Name _____

Firm _____

Address _____

Tell 'em you saw it in ROCK PRODUCTS.



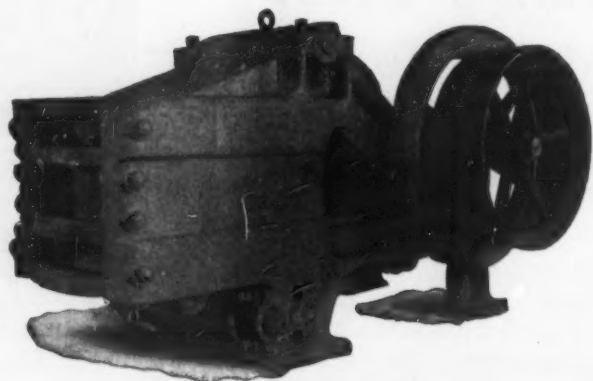
ENTERPRISE PLASTER MIXER

NOISELESS,
DURABLE and EFFICIENT.

For Mixing Hair Fibre, Wood Fibre and
Retarder with Dry Plastering
Materials.

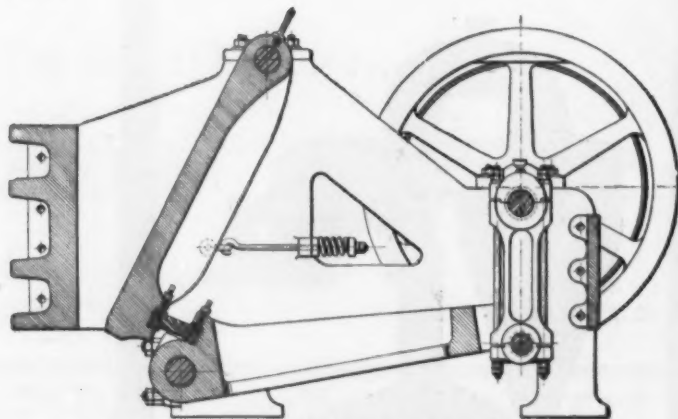
Calcining Kettles

Jaw and Rotary Crushers for Gypsum, Reels,
Vibratory Screens, Hair Pickers and Trans-
mission for applying power.



EHRAM NO. 4 JAW CRUSHER.

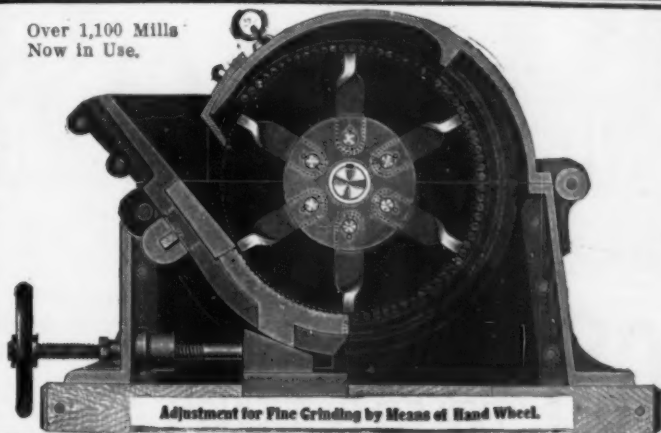
This machine will handle large chunks and reduce from 30 to 40 tons
of Gypsum per hour to 2½-inch maximum or smaller if wanted.



NO. 4 JAW CRUSHER, SHOWING SECTIONAL VIEW OF NIPPER.
The jaw opening at inlet is 18x28 inches.

The J. B. Ehram & Sons Mfg. Co.,
BUILDERS OF
COMPLETE EQUIPMENTS FOR PLASTER MILLS
Enterprise, Kansas

Over 1,100 Mills
Now in Use.



Adjustment for Fine Grinding by Means of Hand Wheel.

RAW MATERIAL Grinders

UNIVERSAL for Tube Mill Feed, 800 bbls. per day 20 mesh.
VULCANITE for $\frac{1}{2}$ in., $\frac{3}{4}$ in. and $1\frac{1}{2}$ in. work.
We also grind Lime, Gypsum, Coal, Etc.

Write for Bulletin No. 12.

The Williams Pat. Crusher & Pulverizer Co.,
Old Colony Building, CHICAGO.

"Brownhoist" Locomotive Crane

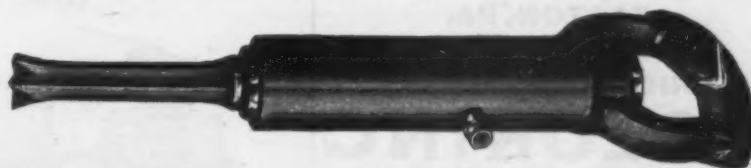
Equipped with clam-shell loading bucket offers the greatest capacity as well as economy for handling sand and gravel in the pit. Crushed stone and screenings loaded and rehandled at minimum cost.

Advance Your Profits by Increasing the Output.

The Brown Hoisting Machinery Co.

CLEVELAND, OHIO

NONE SO SIMPLE — NONE SO EFFECTIVE



WONDER ROCK DRILLS

ARE PLEASING HUNDREDS OF QUARRYMEN. A TRIAL WILL SHOW YOU WHY.
WRITE FOR CATALOG SHOWING DRILLS, BITS AND BIT SHARPENERS.

Hardsocg Wonder Drill Co.

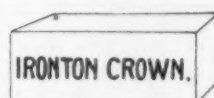
Ottumwa, Iowa, U. S. A.

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ROTARY CEMENT LINERS.



LIME KILN LININGS.



GROUND CLAY
FOR
WALL PLASTER
AND
BOILER SETTINGS

DIRECT HEAT

DRYERS

—FOR—

BANK SAND
GLASS SAND
ROCK, CLAY
COAL, ETC.

All Mineral, Animal and Vegetable Matter.

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue S. C.

American Process Company

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NEW YORK CITY

RUGGLES - COLES

DRYERS

RUGGLES-COLES ENGINEERING CO.

NEW YORK

CHICAGO

Cummer Dryers

See Other Ad.

Page 71

THE F. D. CUMMER & SON CO.,

Cleveland, Ohio.

BRICK and MORTAR COLORING

After twenty years "CLINTON" colors still stand at the head. Get the genuine, with the "Little Yellow Side-Label."

CORRESPONDENCE SOLICITED.

CLINTON METALLIC PAINT CO., CLINTON, N. Y.

J. K. WILLIAMS & CO.

EASTON, PA.

The Largest Manufacturers in the U. S.

BRICK AND MORTAR
COLORING

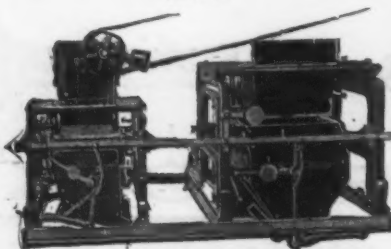
OF ALL SHADES

CORRESPONDENCE SOLICITED. SAMPLES AND ESTIMATES
CHEERFULLY FURNISHED ON APPLICATION.

S. W. SHOOP & CO.
ALTOONA, PENNSYLVANIA

Designers and Builders of the
SHOOP IMPROVED PATENT LIME KILNS.
Designing and installing a Specialty.

YOU may make a mistake in your mixtures, but the
Richardson Automatic Scale
CAN NOT



The Richardson weighs accurately, proportions
of Sand, Lime, Brick, Color and any other
materials.

RICHARDSON SCALE COMPANY,
18-20 Park Row, NEW YORK
also Chicago and New Orleans

MILWAUKEE BAG CO.

MILWAUKEE, WIS.

HIGH GRADE PRINTERS
& MANUFACTURERS OF

DUCK,

OSNABURG

AND JUTE

CEMENT BAGS.

DEALERS IN

PAPER BAGS & TWINES.

WRITE FOR PRICES & SAMPLES.

ROCK PRODUCTS

ESTABLISHED IN LOUISVILLE, KY., 1902.

DEVOTED TO CONCRETE AND MANUFACTURED BUILDING MATERIALS.

Volume VII.

CHICAGO, JULY 22, 1907.

Number 1.

THE FRANCIS PUBLISHING COMPANY

EDGAR H. DEFEBEAUGH, *Pres.*

Seventh Floor Ellsworth Bldg., 355 Dearborn St., Chicago, Ill., U.S.A.
Telephone Harrison 4960.

EDGAR H. DEFEBEAUGH. **EDITORS:** FRED K. IRVINE.
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HENRY C. WHITAKER, *Barre, Vt.* INKERMANN BAILEY, JR., *New York City.*

Communications on subjects of interest to any branch of the stone industry are solicited, and will be paid for if available.
Every reader is invited to make the office of Rock Products his headquarters while in Chicago.
Editorial and advertising copy should reach this office at least five days preceding publication date.

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NEW YORK CITY, Room 431, 136 Liberty St. NEW ENGLAND, 16 Merchant St., *Barre, Vt.*
PHILADELPHIA, Pa., 319 Land Title Bldg. LOUISVILLE, Ky., 431 West Main St.

Entered as second-class matter at the Post Office in Chicago, Ill.

Many great big construction propositions are just getting started.
Circumspect.

Remember that the time when the fall rush of building operations begins is drawing near.

White bricks are now growing popular in Chicago and other markets. The sand lime brick manufacturers only need to agitate the sale of this splendid product.

Cheap labor is a thing of the past. It is just as hard now-a-days to get the poorest class of workmen at high wages as it is to find an expert to manage important construction operations.

Lime manufacturers are waking up to the advantages of hydrating their product. When a man once gets accustomed to working with the hydrated he always asks for it, for there is just as much advantage to user as to the producer.

In the strictest sense of the term concrete blocks are not fire proof, but certainly concrete blocks are a very fine fire resister, and in this way are superior to wood, in any kind of construction where they can be employed, because they can not be made to feed a fire.

The use of Portland cement for the production of ornamental and decorative articles of furniture is being developed with rapid strides, even the most fragile statuary and bric-a-brac having already been produced in colors, tints and blends that will appeal to the highest artistic temperament. There is more yet.

Up to this time the higher art of using stucco for elaborate decorations has been little developed. Are we all too superficial, too much taken up with our own selfish enterprises to overlook the artistic possibilities in this direction? Here is certainly an opportunity for some great artist to give us, at least, as good as the old nations of Europe can boast in this line. There are plenty of Americans who are willing to pay the price.

The throb of industry and the hum of prosperity fill the land.

Cheap materials, like low-priced workmen, are always under suspicion.

When a contractor needs supplies he hardly cares to ask the price. Prompt deliveries are worth more than cheap goods.

The expert inspection of reinforced concrete work as the construction progresses cannot be too rigid. Note that word "expert."

The construction concerns who operate concrete block manufacturing establishments report a very satisfactory growth of that industry. Practically all of them are making blocks of a much higher grade than in any previous year since the introduction of the first machinery for making blocks. Unquestionably the concrete building block has won out upon its merits an important position in the line of building materials.

The quality of concrete building blocks now being manufactured will certainly, in the very near future, displace a very large percentage of the lumber that has been used in the past, and is still being used for the construction of residence properties. And beyond this, they are much superior and certainly much more economical for the construction of curtain walls in large buildings than common brick has ever been. It has been demonstrated that an 8-inch concrete block wall is as strong in every way as a 12-inch brick wall, while the dead weight that must be carried by the construction is only about one-half.

The first great obstacle to the concrete block industry has almost entirely disappeared. It consisted of the large number of incompetents who rushed into the business upon the seductive representations of charlatan salesmen, whose sole purpose it was to unload machinery, and to collect, regardless of the purchaser's possibilities for success. As a consequence of this, at the start a large majority of those who essayed to make this kind of building material had no previous knowledge of such things, and many of them were incompetents of known record, who were misled into believing that this pronounced advance in building materials was a "get-rich-quick-scheme," which waited upon the first man in each community to commence operations.

The arguments and explanations of fire insurance experts concerning the nature and cost of risks upon concrete buildings, as the basis for premium rates, always begin with the hypothesis that the insurance premium levied against the value of the property is a foregone conclusion. They may or they may not as yet have realized that the time is not far distant when the perfect development and universal adoption of concrete construction and cement fire proofing will cause all fire insurance problems to be considered as obsolete and irrelevant. The principle upon which the whole fabric of fire insurance rests is the risk of destruction of inflammable materials used in the construction of buildings. As fast as such materials are eliminated, the risks disappear in the same proportion. The people, of this country especially, have never been famous for paying out good money for nothing.

Editorial Chat

Confidence in Prosperity.

Building conditions throughout the country, and especially in the line of concrete construction are very flattering at the present time. It was figured that on account of getting such a late start there would not be a sufficient number of working days in the building season to allow a normal volume of construction work to be completed this year, and for that reason some of the timid members began to get cold feet before July 1. The overzealous, and, when it comes to industrial matters, the absolutely unreliable daily press, seized upon this partly expressed uneasiness of the tenderfeet and tried to work it up into a fixed and settled opinion, which might of itself work out in such a way as to bring about the very conditions which they exploited as being already here.

It is sometimes amusing to read the "influenced" effusions about the curtailment of expenditures on the part of the railroad managements because of adverse legislative enactments and agitations. The equally "influenced" twaddle about a supposed lack of financial support to the building operations of the country is quite trivial, and really has little bearing upon the truth in the case. It is exploitations of this very nature that has made the daily press of this country lose its power and influence as a factor in forming the opinion and attitude of our great common people, who accomplish all things.

Undoubtedly the railroad managements are very anxious to push their construction operations of every kind, and they are doing so wherever it is possible to proceed. If they have deliberately postponed their work, where is the small army of laborers who have been put out of employment by any such retaliatory policy?

Evidently all of the laborers have found equally profitable employment with other contractors than those under railroad management, and there never was a greater scarcity of labor in both the big and little towns of the country as exists at the present time. Then, see, the same men are working just as hard, using just as much of every kind of material as they did last year or any year previous.

When it comes to finances it is the people who now have the money without the need of expert financiering. Big money manipulations, in reality, affect a very small portion of the inhabitants of this country, in spite of the fact that the editors of the metropolitan dailies cannot see beyond their city limits, or realize that the big city markets constitute only a small item, and contribute for the most part the lowest percentage of profit.

There were several weeks of unexpected bad weather right at the beginning of the building season, and there were intimations and perhaps "influenced" apprehension in some quarters with regard to calamities befalling the life-sustaining crops in every section at one time—almost insinuating that the Almighty had lost his reckoning.

The large doings of the railroads and the financiers cut a very small figure with this great people, but when it comes to the crops they sit up at once and take notice. A few days of sunshine, however, has scattered the fog and the gloom that hung over the crops, and at harvest time the people will have just what they expected all the time—plenty of every comfort, and money besides.

In spite of the sinister squawks of the "influenced" press and their high opinions of the supremacy of the railroad and the financial interests, it is the people who are building this year possibly, and not the financiers. The number of customers has largely increased, while the size of the individual orders on the average are smaller, but the volume of work and the amount of material used will be found, at the end of the season, to be quite as large as the first calculations that were made upon the season's operations.

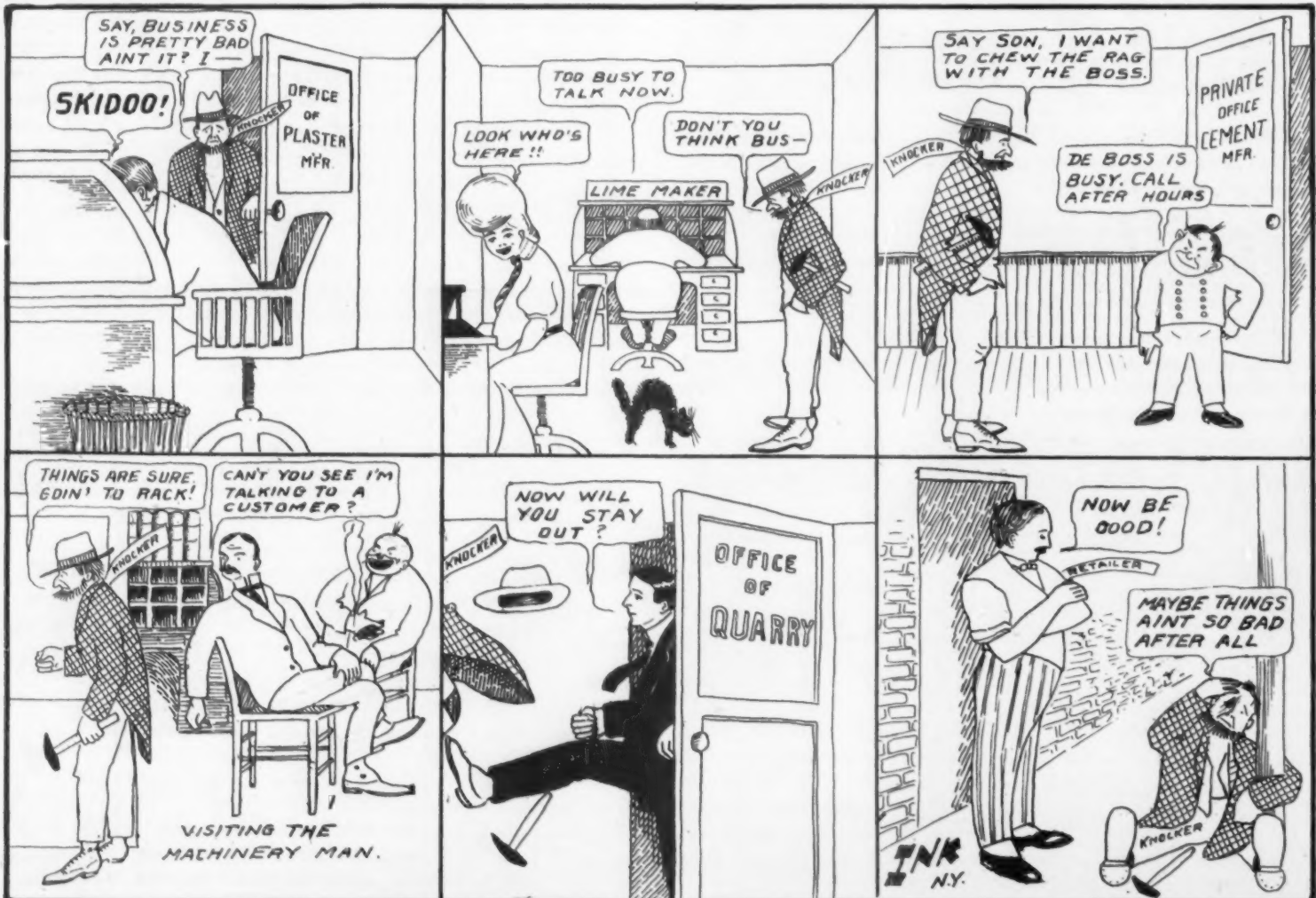
A large majority of the supply people see the handwriting upon the wall, and it is time for the tenderfeet to warm up, for they never can withstand the grand rush which will develop into a torrent by the middle of August, and in September there will be a stampede for everything that looks like building material.

If this looks too good to be true, check your calendar day by day, and you will get an object lesson of the confidence in prosperity that sustains the American people, especially with regard to all kinds of building operations and investments, independently carried on. Look well to the lesser cities and smaller towns.

F. C. Price, of the firm of Waterhouse & Price, San Francisco, Cal., the well-known dealers in builders' supplies of all kinds, has just returned from quite an extended visit to his old home in England. He is a native of Shrewsbury, one of the historic spots of Old England, where his mother still lives. Mr. Price was accompanied by his wife on his travels. Besides visiting England, they crossed over to Holland and Belgium, and observed many things of great interest. Before coming to this country Mr. Price was in the flour milling business, but became engaged in the line of masons' supplies as soon as he came to America, something like twenty years ago. Like every one else who lives in that phenomenal city, Mr. Price is a great believer in the future of the new 'Frisco. Naturally he deplored the present unfortunate labor conditions, but was confident that the right kind of a solution for this and all the other difficulties now confronting the rebuilders will find solution in the best way, and probably act as a guide for the assistance of other American cities, many of whom are in the same position, more or less.

Bert M. Sweet, genial representative of the Lehigh Portland Cement Company, has been on an extended visit as far west as the Mississippi river. He says the only trouble to be observed upon the industrial horizon out that way is the difficulty of securing sufficient workmen to carry on the building and other construction propositions.

B. H. Rader, from the "Universal" office at Pittsburgh, came to his old stamping grounds for a brief visit last week. The big new plant is not yet complete, but there's a place for the output as soon as the grinders get busy. He loves Chicago and there's a whole bunch at this end who are always glad to see him—in fact, there's no end to the welcome.



Howard B. Green of the Whitehall Portland Cement Company, Philadelphia, Pa., was a recent Chicago visitor. He came to take a look in at the national advertising men's convention, and incidentally to take a whack at the ball in the big golf tournament. He takes a whole lot of interest in golf, and plays as he works, with his head on the game. Of course he plays golf for the joy of the great outdoors, the blue sky, the green sward, and the breath of the summer wind, and on account of this recreation he is all the better a cement man. He was not seriously disappointed in not winning all of the trophies. He much prefers a square game of golf, with every point of the rules fairly observed, than to merely say, "I won the game." He looks at it as Henry Clay did when that statesman delivered his greatest retort upon a memorable occasion long ago, "I would rather be right than be president."

H. Dittlinger, of New Braunfels, Tex., spent a day or two in Chicago recently. He is equipping his lime works with the Combustion Utilities system for the economical burning of lime, and is erecting a hydration plant, after the well-known Kritzer model. He is one of the progressive men in the lime business in the southwest, and as soon as his new equipment is completed will be in a position to take care of a larger territory than heretofore. Aside from all business considerations, he is a charming companion socially, and this has won him a very wide circle of friends, both on this side and in the old country.

Fred W. Cubbins, of the Cubbins Lime and Cement Company, Memphis, Tenn., is spending his vacation at a summer resort beside the shores of Lake Michigan. They say he has been doing some fishing, and he started to tell a fish story just as a big factory whistle went off with a tremendous screech, and that is all that saved Fred from telling the length of that fish. It was, indeed, a narrow escape, but all the same his vacation has done him a whole lot of good, even if he did not win every bet he put on the trotting races. He said that business is very good with his concern down in Memphis, although the season was a little late in getting started, the same as in every other locality.

Our genial friend, Harry S. West, secretary of the National Builders' Supply Association, was in Chicago recently. Naturally his first job was to look up Rock Products, and he found us as usual hard at work for the betterment of trade conditions generally. Mr. West has been making a missionary trip among the many dealers in the states adjacent to Ohio, and says that the applications for new membership in the association have reached astounding figures. This is the kind of news that rings well to the ear, and is one of the results of progressive and earnest association work.

G. E. and E. G. Salter, of Melbourne, Australia, have been in this country for some time investigating and studying the concrete and cement block conditions, means of manufacture, etc. They have purchased a No. 4 Fisher Hydraulic plant and will establish a company at Melbourne for the manufacture of concrete blocks. Near the place where they will establish their plant is a fine sand supply. They have been here two months and left a short time ago for England. After traveling the continent they will return home. This is their second trip around the world. They will act as agents for the Fisher Company in Australia.

Progress of New York's Canal Work.

New York State Superintendent of Public Works Stevens recently inspected the Lockport, N. Y., site for the proposed lift lock to cost about \$1,000,000. This lock will be a part of the great improvement being done in New York state in connection with the construction of the 1,000-ton barge canal.

Attorney-General Jackson has expressed his official opinion that under the terms of the 1,000-ton barge contracts contractors may be compelled to do excavating necessitated by changes of plans at the contract price a cubic yard in all cases where the general character of the work is the same. The question came up in connection with the contract No. 6, for about three miles of barge canal work west of Rochester, N. Y. The state engineer found that a change would have to be made in the slope of the canal banks to prevent them from falling in. The change necessitated additional excavating, for which the contractor wanted 79 cents a cubic yard instead of 46½ cents, which was the contract price. The question involves extra compensation amounting to about \$75,000 in connection with the contract.

Extensive repairs and improvements are to be made by the state at North Tonawanda, N. Y. The work will include the rebuilding of the retaining wall of the locks and the construction of new abutments.

Concrete Engineer

For the Boys in the Trenches.

In a paper read before the members of the Pacific Northwest Society of Engineers, which convened at Tacoma recently, James H. Kelly of Tacoma made a protest concerning the unfair division of credit for engineering accomplishments made between those who plan the feats and the executive engineers who do the work. He said:

"We have before our notice always those towers of strength in the profession, who with the great testing laboratories at their command, evolve the ready-made formula we have grown so much to depend upon. The world has shown its appreciation of them. But there's the fellow no one ever hears of—the engineer who hits the trail to where the job is that has to be done. He, with a limited amount of material and money, but with from five to ten million dollars' worth of advice from his board of directors which, however, is usually applicable to some other altitude, if at all, gets the strangle-hold on the plow and never turns his gaze back toward the machine shops, rolling mills and sawmills he has left behind. He has rid the frontier of its difficulties and made it possible for those great men to build on his hardly wrought sub-structure their great superstructure of which the world takes note. He is the man who, when necessary, fashions the silk purse from the porcine ear."

Rigid Concrete Inspection.

NEW YORK, July 18.—On July 10 a large concrete building in course of construction at Philadelphia fell to the ground, killing two workmen and injuring fifteen others, as stated in our reports upon another page.

Whatever the cause for the collapse of the structure, whether it be due to negligence or ignorance, it is deplorable, and such accidents as these can only result in injury to the concrete industry in general. Especially is this regarded as unfortunate in New York, where the efforts to push concrete construction to the front have been met by organized resistance all along the line. While the cause for the accident undoubtedly lies in the fact that supporting props were entirely removed from under green concrete girders through the mistake of workmen, who it seems were instructed to remove but half of the props, yet engineers have said that the rush way in which the construction progressed had much to do with its downfall. Here we see a case which seems to reflect discredit upon the methods of construction and shows negligence on the part of some one, and is in no way whatever a proof that concrete is not in every sense a substantial building material, but, nevertheless, whoever reads of the collapse will not be inclined to look more favorably upon concrete construction.

Edwin Clark, chief of the Bureau of Building Inspection, gave it as his opinion that the physical construction was not of the best, and that the contractors had not allowed sufficient time for proper setting. He said: "It was a mere mud building from what the workmen tell me."

Just as may be expected, the calamity has started more investigation in New York of the concrete work now going on, and the following from the New York Times ought to serve as a warning to all concrete contractors to give the closest attention to every detail of construction and see that they, by faulty methods of construction through negligence and ignorance and dishonesty, do not reflect discredit upon an industry, which when intelligently and honorably conducted is one of the greatest of the present as well as the future. The Times says:

As a result of the collapse of a concrete building in course of construction in Philadelphia on Wednesday and of the recent report of the board of underwriters of this city, the inspectors of the bureau of buildings will be ordered within a day or two to make their examination of concrete buildings more thorough than ever before, and the plans for such buildings will be scrutinized by the bureau's engineers with the utmost care.

While it is realized that the accident in Philadelphia was probably due to the action of Italian laborers in knocking out all the supports of the "green" concrete on the upper stories, when their instructions were to remove only half of them, it is realized that reinforced concrete building is as yet little more than an experiment, and that, therefore, the utmost

care must be exercised to avoid a repetition in this city of the accident that resulted in the death of two men in Philadelphia.

On Thirty-ninth street, west of Seventh avenue, the new McGraw reinforced concrete building, which is to be twelve stories high, is in process of construction. Frank R. Gilbreth is the contractor, and with him is associated J. W. Buzzell, a civil engineer. Mr. Buzzell had this to say about reinforced concrete buildings in general:

"Like any other form of construction, reinforced concrete construction should be done only by contractors experienced in that line. The number of firms that are now specializing in reinforced concrete work leaves no valid reason for the employment of inexperienced contractors. The neglect of this factor, besides spelling disaster, discredits an excellent form of construction."

Right Up in Line.

The Consolidated Engineering and Construction Company, Syracuse, N. Y., has been awarded the contract for the erection of the building for the Orange Publishing Company in that city. It will be of fireproof construction, with reinforced concrete floors. The design and plans are by A. L. Brockway, architect, of Syracuse.

The same concern is making great progress with the steel and reinforced concrete construction of the Town Hall building at Fairport, N. Y. It will be completed in contract time.

H. A. McMore, structural engineer, has been engaged by the General Fireproofing Company, Youngstown, O., and will devote his attention to designing and estimating reinforced concrete work for that well-known concern.

Well Known Construction Company.

The Freeborn Engineering Company at Kansas City have recently completed the Kansas City Portland Cement Company's plant, and are also constructing the building for the Bonner Portland Cement Company at Bonner Springs, Kan., and also the United States Portland Cement Company plant at Yoseminto, Kan.

A Concrete Separator.

A novel device and one which will doubtless prove itself useful to many builders using concrete is a separator used to hold the sides of forms used in the construction of foundations and walls the required distance apart. This separator is the invention of William T. McCarthy, a New York contractor and engineer. As is commonly known to contractors the devices ordinarily in use in the past have been sticks of wood placed between the sides of the forms while the bolt holding the form together was tightened. Another method commonly in use is to employ a gas pipe through which the bolt is thrust and then withdrawn afterwards, leaving the pipe imbedded in the wall. Still another way is to use a doubled wire and by twisting it to gain the same results as with a bolt. In case wire is used a stick of wood is also necessary to hold the sides of the form apart. There is undoubtedly great objection to the use of these different methods which are apparent to the contractor. When the bolt and stick are used together the stick must be left in the wall and the withdrawing of the bolt injures the wall or the bolt itself in many cases. The objection to the gas pipe method lies in the fact that the pipe must be left in the wall, which almost invariably stains the wall with rust streaks. In using the twisted wire method, combined with the necessary wooden stick, both are left in place. The new separator is made of concrete. It is shaped just like a pipe and is used in exactly the same manner as the gas pipe. The advantage, however, is that when left in the wall it becomes a part of the wall and of course does not rust or stain it. A special machine was designed by the inventor to make these separators, which are manufactured in three sizes, four, five and six inches in length. By using the right number they can be used to separate the sides of any mould, whatever the distance apart. The Abbey-Dodge-Brooks Concrete Company are the manufacturers of these separators, and report that the idea has been taken so favorably by contractors that they are unable to supply the demand. The price of the separators is very small.

Progress on the Panama Canal.

WASHINGTON, D. C., July 7.—The Washington office of the Isthmian canal commission yesterday received a cable from the chief engineer, Colonel Goethals, saying that the excavation on the canal during June was as follows:

Culebra division, 624,586 cubic yards, in spite of 14-inch rainfall; Gatun, 75,019 cubic yards; dredging in canal prism, 81,352 cubic yards; total, 780,957 cubic yards.

During the month of June, 1906, there was only 207,760 cubic yards taken from the Culebra division, as against the 624,586 cubic yards for the same month this year.

Longest Concrete Bridge.

What is believed to be the longest solid concrete bridge in the world spans the Hudson river at Sandy Hill, N. Y. The construction of the bridge was begun in the summer of 1906, and the work will soon be finished. This is not a reinforced structure, as would be expected, but is a real solid concrete structure, being composed of concrete blocks joined by means of cement.

The bridge is 1,000 feet in length and contains 40,000 cement blocks. The railing also is made of the same material and in this are contained 3,224 pieces. Both trolley lines and roadways for vehicles cross the structure.

Governor Hughes, of New York, will attend the formal ceremonies at the opening of the bridge, which will take place some time in August. The event will be a memorable one in the history of Sandy Hill.

Extent of Improvements at New Orleans.

The annual report of Col. E. H. Ruffner, U. S. A., in charge of the United States engineer department for the Gulf District, has been forwarded to the secretary of war. Among other things in the summary of the report relative to the Southwest pass he said:

"During the fiscal year ending June 30, 1907, 23,097 2-9 square yards of mattress held in place by 6,144.73 tons of stone was placed in the east jetty; also 17,369.02 tons of stone as foundation for concrete, and 22,905.1 cubic yards of concrete.

"During the same period 54,976 4-9 square yards of mattress held in place by 13,365.27 tons of stone, 24,148.25 tons of stone as foundation for concrete and 1,344.86 cubic yards of concrete were placed in the west jetty. A total of \$533,704.68 was expended during the fiscal year in connection with jetty construction.

"Up to June 30 the contractors have placed in connection with the construction of the east and west jetties 1,067,106 6-9 square yards of mattress, 231,864.31 tons of stone on mattress, 88,392.62 tons of stone as foundation for concrete, 24,249.96 cubic yards of concrete, 12,884 burlaps and 61 sacks.

"It is shown in the report of Cornelius Donovan, assistant engineer, in regard to the subsidence of the jetties, that since placing the concrete casing on the east jetty Sept. 13, 1906, to date, there has been an average settlement of nine-tenths of a foot, the greatest settlement being one and eight-tenths feet and the least two-tenths of a foot, except at two places as follows: At station 7,000 it settled 12½ feet for a distance of 36 feet, and at station 7,400 it settled 4 feet for a distance of 24 feet. The settlement at these places was sudden and rapid. For several months there has been no further settlement. The sinking is not at all a serious matter. The contractors earned during the year \$467,704.15, and to June 30, 1907, a total of \$2,454,094.46."

It may seem late to give this report, but a government report is not given to the public until the department has checked it up to the fraction of the hundredth part of an inch of work and a fraction of mill in finances.

Cement Construction in Natural Land.

BY CHARLES CRISTODORO.

The engineering feats of the day surprise us, as problem after problem in tensile strength, resistance, oscillation, expansion and contraction are solved. We stand in front of a skyscraper and, not being engineers, ask ourselves all sorts of, by us, unanswerable questions.

From the caisson foundations to the cornice on the roof is one continuous problem to us. The steel and stone veneer construction was surprising enough, but now comes the reinforced cement engineer, and he begins to do wonders. He runs up ten, twenty floors, the walls seemingly in one continuous piece, without joint and without seam. He builds floors of cement that are innocent of supports and you wonder that the cement floor does not fall of its own dead weight, let alone bearing up hundreds of pounds to the square yard.

For a skyscraper the engineer hunts bedrock foundations, and he goes down fifty, sixty, perhaps a hundred feet, and then he sinks his concrete shaft that will remain firm and solid, as concrete, even should the basic rock itself crumble.

It is an undertaking the sinking of those caisson pits, and time consuming and costly.

Now let us turn to Nature and see one of these caissons sunk, without tools and without hoisting derricks, or any locks, or anything else.

Let us turn to that most knowing and perfect of insect engineers and caisson builders, the trap-door spider. He picks out no soft, sandy spot but preferably selects for his caisson the toughest, hardest, sun-

(Concluded on page 57.)

Quarries.

American Roads.

It is the invariable verdict of those who travel much abroad that America has little to boast of in the way of good roads. Our great skyscrapers and our fine shops are admired by all, but our roads are subjected to much criticism. West of the Mississippi river almost no good roads exist and few are to be found outside of the narrow strip of territory along the Atlantic which constitutes the oldest portion of our country. However, America is young in comparison with the countries on the other side which are famous in the matter of roads, and if interest in road building continues to grow we may one day be recognized as a progressive and up-to-date people in this important indication of civilization.

The value of the automobile in awakening wealthy people to the shameful condition of roads is inestimable. Recently New York City was visited by Miss Victoria Godwin, said to be the foremost woman motorist in England. Miss Godwin has motored extensively in Europe and came to America to see what automobilism is like here. She pronounced our roads very bad, little better than those of Russia and not to be mentioned in comparison with the highways of France and England.

Work for Improved Roads.

The American Motor League is being subdivided into state divisions, and the work is well under way in thirty-four states. Each state is to be divided into a convenient number of districts and representatives chosen for these districts to act on the state boards and to serve on the state organization committees until the beginning of the next official year. The state boards will elect delegates to the national assembly, the first meeting of which will be held in October. At the national assembly will be elected the officers for the coming year and plans will be outlined for active work in obtaining better roads, better road laws and more equitable regulation of automobile travel on streets and roads.

In preparation for this campaign the league is distributing a little pamphlet on road making entitled "Country Roads." It is well illustrated and contains chapters on "Road Philosophy," "Road Drainage," "Improving the Surface," "Cross Drains and Culverts" and "Bridges." A companion volume entitled "Macadam Roads" has been distributed until the edition has been exhausted, and illustrations and changes are now being made preparatory to putting out a revised and enlarged edition. It will contain chapters on "History and Description of Macadam Roads," "Grades," "Drainage," "Making the Macadam Surface" and "Maintenance of Macadam Roads." This is effort in the right direction and being well planned and systematically put into practice will undoubtedly accomplish much in bringing about more satisfactory conditions in the roads of the country.

Not on the Payroll.

They do their work with intelligence; they never complain; strikes are unknown among their number and they are faithful to the cause. In fact, they earn their pay of oats and hay, these equines in the great stone quarry, quite as meritoriously as their collaborators, the workmen, do their wages.

It is almost as interesting to watch the horses in a quarry as to view the educated horses on the vaudeville stage or in the tent, although the aristocratic performer would probably look with scorn on them as illiterate pretenders. These horses need no drivers, and they are trained with surprising rapidity. On a ledge in the side of the hill where men are busy removing rock two of them are hitched to a two-wheeled cart, traveling between the quarry and the crusher. Perhaps there are two openings being worked, and there are two big crushers in operation. A team of horses works between each quarrying place and crusher, and although the paths cross the horses never become confused. When the cart is loaded they go to the dump, await their turn in line, and then with some slight assistance from a workman back into the dump. When the cart is emptied the animals go back for another load.

Within convenient reach is a water tank, and occasionally the horses stop to get a drink, or they may even wander away from the regular path for a little rest, returning to work with renewed energy. Accidents

are rare, as the horses are not as foolhardy as workmen often are. They seem to enjoy their work and often play tricks on the newcomers among their number. They will go out of their way to catch the wheels in the novice's cart and back up in his way or do anything to annoy him. It is very interesting to watch these horses, and they might, were we disposed to appreciate it, serve as a profitable lesson in cheerfulness and contentment, as they go about their work seemingly mindful of that pointed little saying, "Don't grunt; do your stunt!"

Word From a Hustler.

CAPE GIRARDEAU, Mo., July 2, 1907.—Edward Hely, large cut stone contractor, with quarries at Monon, Ind., Williford, Ark., and Cape Girardeau, and big flint quarries at West Point, Ind., writes as follows: "Busy as a bee crushing rock for 'Frisco' railroad at Cape Girardeau. Just putting in a steam shovel and starting to load flint at West Point. R. R. Moonman, manager of my flint crusher, is busy taking contracts for the only pavement which is 'hard as flint' as well as dustless. My Monon crusher has a good lot of orders ahead and will be busy all season. Have just bought seven new drills and will soon put in a larger compressor. Always read your paper from 'kiver to kiver.'"

To Build New Plant.

The Woodward-Pauseh Stone Company, which has large stone quarries near Arlington, Ia., will soon begin the erection of an additional plant for crushing stone. The company enjoys an extensive business in crushed rock for furnace flux and ballast, the rapid increase of which has made greater facilities for crushing necessary.

It is announced that the management of the New York Central lines has decided to lay a rock ballast top on the Lake Shore & Michigan Southern railway between Chicago and Buffalo. The present road bed is largely gravel which, although it makes an easy-riding foundation, being very resilient, produces much dust and is otherwise unsatisfactory. Crushed rock, by far the best ballast material, will be put in as a top dressing for the gravel foundation.

The Waterville Stone Company of Toledo, O., was recently incorporated, with \$10,000 capital stock, to operate a crushed stone plant at Waterville. Clem V. Wagner, H. C. A. Elbert, M. O. Topcliffe, M. L. Brown and G. E. Aylesworth are the incorporators.

The New Ulm Stone Company, New Ulm, Minn., reports a busy season. It has recently booked several good orders for crushed stone for Twin City concerns.

Oroville, Cal., is to have a large rock-crushing plant in the near future. Local capitalists are financing the proposition of W. R. Bassick and H. A. Kluegal will be in charge of the operations. A plant with a daily capacity of 1,000 cubic yards of rock will be established. It will be equipped with modern machinery and operated by electricity.

GREAT DOUBLE UNIT CRUSHER AT JERSEY CITY.

(Concluded from page 3.)

complete the work, which has been started simultaneously at several different points. This company purchased over \$175,000 worth of new machinery to handle the contract.

The vast amount of excavated rock will be of inestimable value to the road for use as ballast, and it is to be crushed to 2-inch size and held in reserve to be used as needed; two large storage banks have been provided for this purpose.

The rock-crushing feature undoubtedly constitutes the most important part of the work, as upon its successful accomplishment depends largely the net cost of making the entire cut. Crushed rock is constantly increasing in value for a great many purposes and in this case the cost of excavating will be practically offset by the saving which the rock thus obtained will effect in the regular expenditures for ballast. Thus it will be seen that great importance attaches to the results obtained from the crushing plant.

The equipment really consists of two plants, each complete in the smallest detail. The cut will reach a maximum depth of 60 feet, and owing to the fact that it is to be part open and part tunnel work the use of conveying cableways spanning the work was decided upon. At the eastern end there is an open cut about 1,200 feet in length and over this are stretched two balanced cableways, each 1,300 feet long. Over the rest of the work are distributed five cableways arranged to be moved lengthwise of the cut as the work progresses. The two longer cableways dump rock onto an apron from which it is spouted direct to the No. 9 McCully crusher at the



CRUSHING PLANT AS IT LOOKED MARCH 29.



INCLINE USED FOR BUILDING UP STORAGE PILES (APRIL 25).

eastern plant. The shorter cableways dump into cars which are hauled by small locomotives to the No. 10 crusher at the western end of the work.

The eastern plant consists of one No. 9 and two No. 6 McCully crushers, with elevator and screen arranged to spout the rejections back to the No. 6 crushers. The screenings are delivered into a hopper from which the stone is fed onto a 30-inch belt conveyor, which conveys the stone out over the meadows at the foot of the hill. On these meadows is stored the crushed rock which comes from the eastern end of the cut. The plant is at such a height that by carrying the conveyor on practically a level grade, a height of about 75 feet above the meadow is attained. A tower has been erected at the edge of the meadow from the top of which the stone will be dumped from the end of the belt until a pile 75 feet in height has been built up. On this pile is a movable stacker carrying a swinging boom on which is mounted a 30-inch belt conveyor. A second belt conveyor is installed at this tower which receives the stone from the first conveyor and which discharges on the conveyor of the stacker. This stacker makes it possible to pile the stone over an area 120 feet wide at the top of the pile. As the pile is built up the stacker will be moved forward and the second conveyor extended accordingly.

At the western plant has been installed one No. 10 and four No. 6 McCully crushers; also two screens and the usual elevator, the screens being arranged to spout back direct to the No. 6 crushers. The stone from this plant is distributed in the same manner as at the eastern plant, the only difference being that height must be attained by running the stone on the conveyors up an incline. The pile in this case will start with a height of about 75 feet and, owing to the shape of the plot of ground upon which the stone must be piled and the fact that it is no larger than will contain the stone that must be piled upon it, the stacker will be gradually elevated as it is pushed forward, and the conveyor, corresponding to the second one of the eastern plant, will be carried on an

ascending grade. In this way a height of about 30 feet additional for each 100 feet of horizontal progress can be obtained without difficulty.

The dust which is formed at both plants must be separated from the ballast and this will be accomplished by a 20-inch conveyor which is extended laterally from the head of the first conveyors of each plant; that is, these 20-inch conveyors are built out from the towers which have been erected to start the storage piles. The dust and stone will of course mix to a certain extent where the two piles join, but this mixing will probably not occur for more than 6 or 8 feet in width, and will not cause any difficulty in handling the stone for ballast at a later date. The dust from the broken stone will be screened out and stored temporarily in pockets beneath the screens, from which place it will be spouted, as the pockets fill up, to the belt conveyors and stacked in a separate storage pile.

All the machinery for the two power plants was also supplied by the Power and Mining Machinery Company. At the western plant a large powerhouse has been erected, and steam boilers of 2,000 horsepower will furnish power for rock crushing done at this point, also for three large air-compressors supplying the air to 70 rock drills. The electric generator furnishing current for the electric carriages on the cableways is also located here as well as the generators for furnishing light to the entire works. A compressed-air main extends from this powerhouse clear across the hill, supplying air for drilling, etc., at all points of the work. Three 2,100-cu. ft. cross-compound compressors supply the air for the drills.

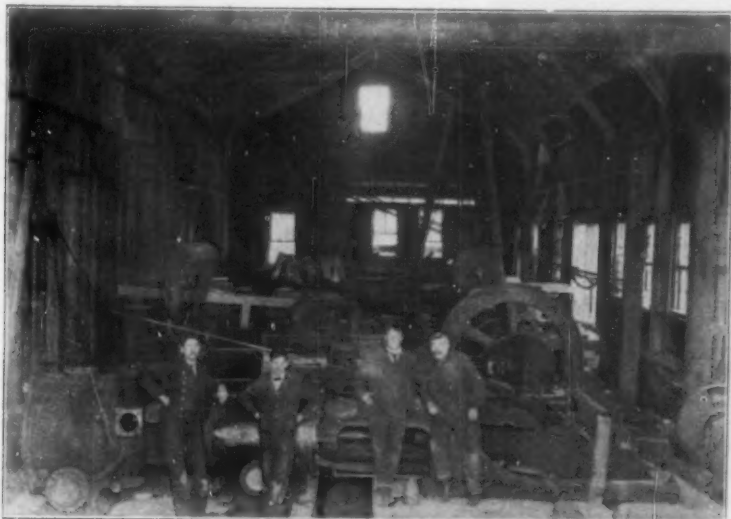
From this description it will be seen that the plant is not only of large size but is complete in the minutest detail. The rapidity with which the Power and Mining Machinery Company handled this monster proposition is indeed commendable, considering the many drawbacks in the way of strikes, slow delivery, etc., which at the present time delay heavy construc-

tion so often. From the laying of the foundation on January 16 to the completion of the plant May 1, a period of a little over three months, the company erected, fitted out and turned over to the Erie road these two large and modern crushing plants ready to begin operations.

Accompanying this article is a series of pictures, arranged in point of time, showing various stages of progress made in the erection of this remarkable plant.

Railroads in the past have hesitated to undertake the work of cutting their way through this barrier of solid rock as the expense involved made it almost prohibitive. This cut made by the Erie road will serve as a precedent to demonstrate that it is not such an expensive proposition after all. Every ounce of excavated material will be utilized and all that the railroad company does not have use for itself will undoubtedly be marketed at good prices. There is an insatiable demand for crushed rock not only for ballast but for macadam and concrete and high prices rule. The company will have a reserve supply of ballast sufficient to last for a long time to come, and will thus be saved a large item of expense. The screenings accumulated in the work of crushing, which, as is well known, were once considered only as troublesome waste entailing expense to be hauled away, will in this case find eager-buyers in territory in close proximity to Jersey City. Thus it may happen that, through the saving in the outlay for ballast and the sale of screenings and concrete stone, the company will not only avoid the heavy expense usual in making such a cut but may actually realize something of a profit on the undertaking.

Cutting through rock is a long, expensive and tedious process, but the rock itself is of such great value for so many uses at the present time that the work and expense of excavating has come to be practically nil in such a case. This is only one more proof of the great benefits following the development of economical practices in connection with big engineering propositions in the industrial world.



INTERIOR OF THE POWER PLANT (APRIL 25).



GENERAL VIEW OF THE CRUSHING PLANT COMPLETED (APRIL 25).

Lime.

The National Lime Manufacturers' Association

Meets Semi-Annually.

Peter Martin, Huntington, Ind. President
A. A. Stevens, Tyrone, Pa. First Vice President
W. B. Carson, Riverton, Va. Second Vice President
T. H. Fleischer, Sheboygan, Wis. Third Vice President
C. W. S. Cobb, St. Louis, Mo. Treasurer
E. H. Delebaugh, Chicago, Ill. Secretary

Official Organ, ROCK PRODUCTS.

Hannibal Lime Company Installs Hydrating Plant.

HANNIBAL, Mo., July 17.—The Hannibal Lime Company, one of the oldest and best known lime concerns in this section of the country, has just started its new hydrating department. The work of installing the new system has just been completed by Charles C. Kritzer, the inventor of the machine used in the process, who personally superintended the work. In order to accommodate the new hydration plant additional buildings were erected, two stories in height, and conveniently adjacent to the kilns.

The plant is designed to hydrate the output of three large kilns, each having a capacity of 125 barrels per day. Quite a number of changes were made in the lime producing plant at the same time, the method of quarrying limestone being completely revolutionized and the system of taking the stone out and conveying it to the kilns being materially changed.

The Hannibal Lime Company owns about 186 acres of limestone deposits, the average depth of the limestone stratum being about 15 feet. Up till last year they quarried by the old process, but in order to do away with stripping, they decided to tunnel under the earth, and they are at the present time tunneling in three places, which will eventually connect on the inside. The tunneling process has been found far superior to the old method from the standpoint of economy, as it does away entirely with stripping. Above the limestone deposit is found a very hard iron rock which serves as a roof. Only the stone which can be used for lime is taken out and as a consequence there is no wasted effort. Previously all of the upper stratum of rock, which was not needed, had to be stripped away, not only entailing considerable expense, but actually being in the road, as a market could not always be found for it.

The analysis of their raw product is as follows:

Silica	0.08
Alumina and oxide of iron	0.40
Magnesia	0.02
Carbonate of lime	98.80

It will be seen from this analysis that their raw material is of the very highest quality, and with the modern methods in vogue at this plant they are enabled to produce lime which, for strength, whiteness and smooth working, has few equals and no superiors. Their output is known as the Bear Creek White Lime and has been prominently on the market for thirty-three years.

They drill the rock with the Ingersoll-Rand air drills and blast with dynamite, Judson and black powder. These Ingersoll-Rand air drills will drill from 120 to 140 feet a day apiece. The black powder is used only at the top, the dynamite and Judson being used further down.

The rock is placed in cars and hauled to the mouth of the first entrance and there attached to the air hoist, which pays out the steel cables, the cars gravitating towards the entrances to the lime kilns. The track from the mouth of the first tunnel to the kiln is 720 feet in length, and a car of crushed rock can be sent to the kilns every eight minutes during the day if necessary. The company has nine perpetual draw kilns, all of modern type, but they only hydrate the capacity of three of them at the present time, although the plant is constructed so that the capacity can be doubled by the installation of more machinery without erecting any additional buildings.



NEW HYDRATING PLANT OF HANNIBAL LIME CO., HANNIBAL, MO.

The lump lime, after it comes from the kilns, is conveyed in a 24-inch belt 200 feet in length into the hydrating plant first to the Sturtevant crusher. From thence it is elevated to a bin which in turn feeds the hydrator.

The Kritzer continuous hydrator is one of the newest inventions of the Kritzer Company of Chicago, Ill., and consists of four cylindrical drums, through which the lime is mechanically driven and supplied with the water necessary for complete hydration while the alternating agitation is continuously maintained to the point of discharge. It is designed to hydrate the capacity of the three kilns. It is not only one of the newest but one of the largest hydrators ever installed in this country. It is a new departure, providing some radically original ideas. It is automatic as well as continuous, is self cleaning, cannot clog, and the dust and vapor are caught and turned back into the machine for further hydration. The product is a perfectly dry hydrate as discharged from the machine. Only enough water is fed into the machine to create the necessary chemical reaction. The vapor which is generated is carried through different drums, finally entering the exhaust stack. The circulation of this vapor is controlled by a set of valves. As the lime passes through the ascending vapor the many paddles of the internal conveyors keep continually stirring up the mass, and as the process continues the lime particles become finer and finer. A constant repetition of this process is continued until every particle of the lime has been broken up and every atom has been thoroughly permeated with moisture and chemically changed or hydrated.

The Hannibal Lime Company had long considered the installation of this plant and finally yielded to the popular demand for hydrated lime. It is needless to expatiate upon the many virtues of hydrated lime as our readers are all familiar with the subject. Many of the largest manufacturers of lime in this country are adopting this method and the popular demand for the product is so great that before long hydrated lime will be known in every hamlet in the country.

After the lime is hydrated it is conveyed to screens made by the Jeffrey Manufacturing Company. These are known as 200-mesh screens or 40,000 holes to the



TUNNELING LIMESTONE AT HANNIBAL LIME COMPANY'S PLANT, HANNIBAL, MO.

square inch. The product has been running 50 per cent superfine, although not guaranteed to do that well. That which passes through the screens goes into large bins and is now ready to be bagged. The coarse separation goes to the tailings bin, where the refuse is screened out and the remainder conveyed back to the roller mills.

There are three large bins for the finished product. The hydrated lime is now conveyed to the Urshel-Bates valve bagging machine, where it is put into paper sacks ready for the market. The product is an impalpable powder, so fine that if you run it through your fingers there is absolutely no resistance.

That part of the product which does not go into bags and sacks goes into barrels. The Hannibal Lime Company has concluded to adopt a new hoop, which is made of thin steel.

Mr. John E. Jones, manager of the plant and one of the best known lime men in the country, expresses himself as being highly pleased with the results thus far obtained, and the product has fully come up to his expectations.

The hydration plant is operated by a 60-horsepower engine. Air is used in the operation of the drills and also for power to take the cars back from the kilns to the tunnel. This is furnished by an air compressor with a capacity of 555 cubic feet of air per minute.

A repair shop is maintained in connection with the plant in order to keep the machinery and tools in good order.

The hydrating plant began operation July 15, and every way it is as perfect in every appointment as possible to build. Already a good supply of orders for the product are rolling in, and it will undoubtedly be run to capacity as the trade develops very rapidly whenever it is found that properly hydrated lime can be secured.

Fine Equipment.

NEW BRAUNFELS, TEX., July 18.—H. Dittlinger of the New Braunfels Peerless Lime Company recently returned from an extended visit to the East, where he has placed orders for extensive equipments for one of the most complete lime manufacturing establishments in the country. The New Braunfels Peerless Lime Company is now erecting some improved modern kilns in which the Combustion Utilities Company's fuel saving process will be used. They have about completed the necessary buildings for installing a modern plant to hydrate their lime. The hydrating plant is under contract for construction by the Kritzer Company of Chicago, Ill., and it is expected that both kilns and hydrating plant will be in operation by the middle of December or the first of January next at the latest. This New Braunfels concern is provided with extensive water power which is well harnessed so that this important item of expense in their manufacturing and quarrying operations is practically eliminated. Mr. Dittlinger, at the head of the concern, is an experienced manufacturer and, besides his quarrying and lime manufacturing operations, he carries on the principal flour milling establishment of the district. He is an up-to-date business man, and realizes the importance of having the most approved machinery and appliances to work with.

Will Put in Equipment.

SALT LAKE CITY, UTAH, June 20.—The Pure Fluxing Lime Rock Company of this city has been incorporated with a capital stock of \$50,000. B. F. Hill is president, James Young, Jr., vice president, and Daniel Harrington, secretary and treasurer. The company owns two limestone quarries in the Hot Springs district, Salt Lake county.

Big Gibsonburg Plant.

One of the largest lime plants in the country is being built at Gibsonburg, Ohio, for the National Mortar and Supply Company. It will cost in the neighborhood of \$150,000, will have ten kilns constructed of steel and stone. For heating and lighting it will depend on its own independent gas generator and electric light station. A switch from the main line of the Pennsylvania will be run across to the kilns.

New Industry Established.

BERKELEY, CAL., June 15.—J. E. Carey of the Point Richmond Brick Company has purchased from R. Martinez a lime quarry on the Martinez ranch in Orinda Park, just north of Berkeley. The lime there is a white crystalline quality and some of it is almost marble. It is deposited in almost unlimited quantities and, easy transportation being assured, this will probably develop into one of Berkeley's largest industries.

New Combustion Process Highly Commended.

The representatives of ROCK PRODUCTS often run across members of our vast business family. A few hours spent visiting and in social as well as business chats can sometimes develop a story that turns to a live subject of interest concerning the latest developments of the industry in some particular section or suggest an idea which works out to another's advantage and results in dollars saved and earned. Such was the experience a few weeks ago up in Wisconsin.

Now the lime manufacturers in the Badger state are a live bunch and nothing new happens but what they are either investigating it or are in on it in some way. Any new process of quarrying stone, burning lime or marketing the products of the kilns finds them willing to try, for progress is a marked quality up there. That is one of the reasons why Wisconsin lime is such a respected product.

The new process of burning introduced by the Combustion Utilities Company of New York has been very favorably considered and the Sheboygan Lime Works at Sheboygan, Wis., is one of the first concerns in the West to install the new system. They have equipped two kilns to replace two of the old style and have had them in operation about sixty days.

Through the courtesy of T. E. Fleischer, the manufacturers from the neighboring towns were invited to inspect the new kilns. The ROCK PRODUCTS man

at the Sheboygan kilns, and Mr. Brown was just as positive that the pieces on the top had been brushed especially for this occasion to make us feel bad. It was a pretty hot day and the road was dusty, but we soon reached the kilns and began our tour of inspection under the guidance of Mr. Fleischer.

The plant consists of four kilns, two old fashioned stone affairs, and the two new ones, a crushing plant, engine house and a cooper shop. This plant is the oldest in the state, having been established in 1854 by W. Roth, Mr. Fleischer's father-in-law. The power for the plant is furnished by a Gates engine and an Ingersoll-Rand air compressor furnishes the compressed air for quarry operations. The quarry extends over a considerable portion of the property, though it has not a great depth. The east side of it is near the river and about two years ago when the river overflowed its banks for hours the water flowed into the quarry. During the next twenty-eight days they pumped water, rowed around in boats and fished for fish, quarry tools, the air compressor, and we heard on good authority that they one day held a basket picnic on a spot which they mistook for an island, but which was a ledge they had been working. We weren't able to find out if they had any yacht racing, but presume that it must have been one of the past-time features.

Preparations are now being made to sink another quarry floor and work on it is progressing rapidly.

Of the kilns those put in by the Combustion Utilities Company were of much interest to our party. A concrete platform level with the fire boxes and the floor of cars so that the coal can be easily handled and stored is about four feet from the ground. On this same platform the blower fan is operated by electricity. The kilns are of metal and about the same height as the ordinary kiln. Tracks are run over them in the usual way and the stone dropped in the top until the kilns are filled. The fire is started and to keep it going all day three shovelfuls of coal are thrown on every twenty minutes. The kilns are tapped near the top by a pipe about ten inches in diameter, through which the blower draws off the carbonic acid gas down into the drum, whence it is blown through another pipe under the fire box in such a way as to mix gases drawn from the top of the kiln with air.

The combustion system consists in utilizing all of the products of combustion. That is to say, when a forced draft is used, such as is produced by opening an ordinary door, the air passes under the grate and into the ash pit, due to the rapid entering of oxygen, a constituent of the air, on through the bed of fire and localized heat is produced. On the other hand, with the Combustion Utilities Company's process, the diluent carbon dioxide is used so that the fire does not receive the oxygen constituent of the air as rapidly as it does when straight air is supplied for draft and hence a prolongation of the flame is the result.

It is not claimed for this system that more heat can be produced out of coal than with any other system, but simply that the heating value contained in the coal is distributed over a greater area—due to the prolongation and control of the flames. The temperature at which lime burns is from 2,400° to 2,700° F. When straight air is used in connection with fire, in the shape of forced draft, the localization of heat near the bottom of the kiln sometimes raises heat up to 3,000° F., but the calcination of the lime rock in that case must depend upon the heat generated by this localized combustion, instead of having, as in the prolonged flame, something to sustain the heating qualities over an enormously increased area inside of the kiln.

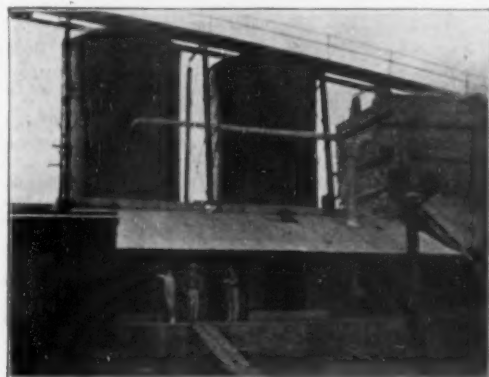
By the action of heat on limestone there is a very rapid reduction in temperature of the heat generated by a rapid localized fire, but where the flame is prolonged while still in the kiln, such as is the case

in the Combustion Utilities process, the action of this reduction of temperature is not so great, because the flames are a mass of combustible gases and keep a uniform higher temperature throughout. In other words, instead of producing a very rapid fire in the fire box, the flame is prolonged and the heating value of this coal is distributed throughout the kiln. This is observed by the different conditions which may be obtained by the admission of carbon-dioxide in the mixing chamber at the blower. When straight air is used without any carbon-dioxide the flame in the fire box becomes a bright white or a very bright yellow. With carbon-dioxide mixed in the air this flame becomes a deep yellow color and very much prolonged, resembling the wood flame, which is the much desired mellow flame, and which produces the best results in lime burning. While practically only one temperature may be obtained when straight air is used in the fire box, almost any desired temperature is obtained with the use of carbon-dioxide as a diluent.

Draws are made every four hours, which Mr. Fleischer said could be reduced to three hours after the new kilns became thoroughly dried out. The average run since starting has been about 100 barrels per day per kiln.

The kilns are on brick and concrete foundations, the upper part being finished with concrete and the fire boxes lined with Evans & Howard fire brick, which has proved very satisfactory.

On the other side of the kiln, where the lime is drawn, the concrete floor is on the level with the ground, and about four or five feet below the plat-



MR. FLEISCHER AND HIS ABLE LIME OPERATORS, C. ASHENBACH ON HIS RIGHT AND J. KEIGER ON HIS LEFT.

arrived in Sheboygan on the morning train and had no difficulty in picking out the lime men among the large crowd which was assembled at the depot by their particularly prosperous and banker-like appearance.

Mr. Fleischer had a carriage in waiting and drove us up to the Foeste hotel where the party assembled. Among those who were on hand were O. W. Robertson, president; Charles Weiler, treasurer; M. J. Ash, manager of the lime department, and J. M. Connell, superintendent, all of the Wisconsin Lime and Cement Company, Milwaukee. A. Newton of the Marblehead Lime Company, Chicago; R. C. Brown, secretary of the Cook & Brown Lime Company, Oshkosh; E. H. Lyon of the Standard Lime and Stone Company, Fond du Lac, and Max Mangelsdorf of the Combustion Utilities Company, New York, and of course ROCK PRODUCTS was on hand.

Under the guidance of Mr. Fleischer we were escorted to the office of the Sheboygan Lime Works, where each and every one of the party was introduced to Miss Roth, who is active in the management of the company. The office is one of the most delightful places we have ever been in and a place equipped to inspire one to higher thoughts of life and the lime business. The building is a two-story affair built of concrete, set on the rear of the lot with a beautifully kept lawn shaded by immense trees and lovely flowers. The office proper is on the first floor and contains large and airy rooms. In the rear of the building arrangements are made for storage of lime as a small stock is carried for immediate calls.

After a tour around the building the party boarded a three-seated rig and led by Mr. Fleischer in his buggy, accompanied by Mr. Weiler, we set out for the plant. On the way out we passed a load of lump lime from the plant containing some very large rich looking pieces which always makes glad the heart of a lime producer. Now, our party was suspicious of this load. Mr. Newton was sure that this was a put-up job on us to demonstrate the quality made



THE CHARGING FLOOR WHERE MR. ASHENBACH KEEPS THE THING GOING.

form of the fire box. The lime is dropped to the floor and shoveled into iron carts and spread on this floor to cool. When cool enough to load into the cars it is carried by carts to the loading track, which runs into the shed. Several large pieces of lime were broken up and found to be thoroughly burned, in fact there was not a single piece examined but what was in good condition and free from any core.

Examination proved that the lime was equal to that burned by wood fire in the old kilns, as exhaustive comparisons were made of the two, draws having been made from each kiln at the same time. There was no discoloration caused by the coal nor was the lime vitrified or overburned because of too much heat. The entire party were convinced that the lime would answer every test of wood burned lime, and Mr. Fleischer stated that his local trade now asked for the coal burned product.

After spending some time investigating the workings of the plant, making comparisons as to cost, etc., we visited the crusher plant. A No. 5 Gates crusher takes the stone that is not used for the kilns. The crusher house contains a full and complete line of elevating and conveying machinery, screens and hoists to handle the stone. After the stone is crushed it is screened into three sizes and separated into bins under which a track runs so that cars can be loaded. When the storage bins are loaded to their fullest capacity the overflow is spouted on belt conveyor and piled where a storage capacity of 7,000 yards of stone can be taken care of.

Some of the party went down into the quarry, but most of them were pretty dry by this time and started on a tour to find something to drink. The wet goods consisted of a pail of water held by the water boy, but even that tasted good just then.

It was nearing the noon hour, so we started back for town. Mr. Weiler positively refused to ride in Mr. Fleischer's buggy, for he said on the way out the horse shied at a train and tried to climb a telegraph pole. It had to be a heavy weight to balance Mr. Fleischer, so Mr. Brown was delegated to the seat of honor.

(Continued on page 56.)



VIEW OF LIME QUARRIES AT SHEBOYGAN.

Cement.

"As You Like It."

Quite contrary to the ancient rule that the "King can do no wrong," the Portland cement manufacturer occupies a position not to be envied, in that with all the vexations and care incident to manufacturing a uniform product, when the time comes to market his material numerous other obstacles are placed in his path, which must be surmounted with a grin and "look happy" expression of countenance.

Many new and inexperienced buyers of cement wait until the last moment before contracting for their needs; others treat cement with the respect to which it is entitled, and buy it just as they would lay in a winter's supply of coal. Now surely the warm open weather has the same bearing on the cement industry as the cold days of winter have on coal consumption, and the fellows who are old at the business use their experience and judgment of years gone by in making their contracts and purchases. This season, however, has been one which has worked in a measure to the disadvantage of the cement manufacturer.

It has been the custom of the mills to run during the winter and manufacture material which could be stored and ready for shipment the moment the market opened. As a result, each spring has found cement in full and plenty for shipment during the first half of the year, but as the summer and fall came on with the many thousands of municipal, government, railroad and private works in progress, all anxious to take advantage of the labor and weather conditions when they were at their best, inevitably the third quarter of the season found manufacturers unable to promptly fill the orders of those consumers who had waited until the last minute in order to avoid the stocking up of material by them, or to take advantage of a possible decrease in price.

The year 1907 has been unduly favored with too much winter, with consequent delay in starting new building projects, as well as finishing works of any magnitude which were begun in 1906. The cement manufacturer, following in the line of all that had gone before, kept his mill running continually during the winter months, and found himself with stock houses full up, and a lack of orders due to "Mother Nature's" delay in giving us the spring weather we are supposed to have, and which appears on all of the calendars of the twentieth century.

The manufacturer, however, who has withstood the trials and tribulations of many years was on to his job, and in some cases shut down a portion of his mill, rather than sell at a loss the stock of cement that had been accumulated. The newer ones lost sight of the fact that selling spot cement for future delivery meant a price which applied not only to a portion of the cement then on hand, but also to material to be manufactured at a future time when all the conditions governing the cost of manufacture might or might not be increased.

The careful dealer in figuring out his business for the year did not take as a criterion the daily newspapers' unreliable reports that there would be a "slump" in the cement market, but used good common sense, weighed all conditions carefully, and made his contracts for specified time and quantities as he then knew them, realizing fully that open weather had to come some time, and that when the "building wheels" were set in motion and had been running for a month or two the same old cement conditions of "bare floors in the mills" would cause inconvenience to all concerned.

The open weather has broken the ice, has been with us for some two months now, and there is every indication that it will continue unless by some supernatural change we are confronted with snow storms in August, so the advice of "the Moses" of the cement industry to both the cement manufacturer, dealer and consumer is, use the same good common sense in either the purchase or sale of cement as is used in the purchase of any of the necessary materials for the maintenance of health and comfort.

The Union Portland Cement Company have let contract for the erection of their plant at Lawrence, Kan., and state that work will be started immediately and pushed to completion.

Quarterly Meeting at Atlantic City.

The quarterly meeting of the Association of the American Portland Cement Manufacturers will be held at Atlantic City September 9, 10 and 11. The association has selected the new Marlborough-Elenheim Hotel, which is a wonderful example of concrete construction, as the headquarters of the convention. Papers on subjects dear to the heart of the cement man are now in course of preparation. The names of the authors and the subjects to be covered will appear in a later issue.

Everyone Busy in New York.

Conditions in New York, as well as in the East, are decidedly flattering at present. A vast amount of concrete construction is going on at this time and much has already been accomplished this year. Among the cement manufacturers nothing but satisfaction with the situation is expressed. What is ordinarily the duller period in the summer season shows a demand much larger than was expected. The same is true of other lines of building materials, and with the beginning of fall the building trades promise to be at the height of activity.

English Cement Manufacturer Here.

D. H. Gibbs, director of the Associated Portland Cement Manufacturers, Ltd., 72 Fenchurch street, London, England, was an interesting visitor at the New York office of ROCK PRODUCTS early this month. Mr. Gibbs, who had arrived in New York only a day or so before his visit to ROCK PRODUCTS, is now in San Francisco, where he will remain for some time before returning to the east and sailing for England.

According to Mr. Gibbs, the cement industry of England and the European countries is making great headway and the progress of the business and improvements in methods of manufacture is remarkable. He said: "Things are moving in the old country a great deal faster than our American cousins generally imagine and a visit to some of the modernized plants belonging to my company would rather astonish folks on your side. In certain directions I believe we are ahead of you."

The Associated Portland Cement Manufacturers of London is the largest cement manufacturing concern in England, having plants in many places and producing an annual output of about 10,000,000 barrels. Mr. Gibbs states that he is preparing some very interesting information concerning the plants of his company and the general manufacture of cement in England and Europe, which we will publish in a later edition.

Unfounded Rumors.

We feel that we are acting entirely within our province as the representative paper of the cement industry when we again most emphatically deny the allegation of a number of daily newspapers in the East that there is a cement trust.

One of the latest bugaboo reports is to the effect that "The National Cement Company, recently incorporated under New Jersey law, was organized for the express purpose of combating the 'cement trust,' which latter was the American Cement Company, organized under New Jersey law in 1899." The combination of the American Cement Company of Pennsylvania, the United Building Material Company, the Jordan Portland Cement Works of Jordan, N. Y., and the Lesley & Trinkle Company of Philadelphia, Pa., was simply to more closely affiliate the manufacturing and selling departments of practically one organization, making the several companies in question subsidiary to the American Cement Company of New Jersey, which was organized, as stated, in 1899.

The North American Portland Cement Company does not operate the Atlas, Lehigh, Alpha, Vulcanite, Lawrence or American Cement Company's plants. These plants are and have been since their organization operated under individual management.

With reference to the statement that there has been a merger of the Marquette, German-American and Chicago Portland Cement Companies at La Salle, Ill., we would state that there has been no merger, no negotiation for a merger, and no such thought on the part of any of the three companies, which are individual competing concerns.

Will Build at Castalia.

SANDUSKY, O., July 15.—The Standard Portland Cement Company has just acquired 438 acres of marl land north of Castalia and will erect a Portland cement plant of 2,000 barrels daily capacity. The plant of the Toledo Portland Cement Company has been purchased by the Standard Company and will form a nucleus for the new plant at Castalia.

Another California Plant.

SAN FRANCISCO, CAL., July 10.—Operations are now being crowded forward on the new and large cement factory now under way at Clayton, near Antioch, Cal. This plant belongs to the Henry Cowell Portland Cement Company, and when completed will be among the largest in California. It will have a capacity of 5,000 barrels a day.

The Cowell Company has also just completed a railroad 12 miles long, reaching from Clayton to Bay Point. At the latter point the line will connect with both the Santa Fe and Southern Pacific roads; and will also have water front privileges, as large wharves are to be built so that cement may be loaded direct on vessels. The Cowell Company expects to expend about \$1,000,000 on the new plant, railway line, wharves and other works.

Starting to Build.

ST. LOUIS, July 15.—The Continental Portland Cement Company, recently incorporated with a capital of \$3,500,000, has elected the following officers: President, David M. Marks; vice president, J. M. Cruikshank; secretary, Dwight Harrison. The directors are: S. M. Brandenburg, John L. Ford and F. H. Cookson, Cincinnati; Judge O. Brown, Dayton, O.; J. L. Ballinger and D. H. Kerwan.

The J. L. Ballinger Construction Company of Columbus, O., has started construction on a plant with 3,000 barrels daily capacity on property located about three miles south of this city. This concern has already successfully built two large cement plants at Logan county, Ohio, and Neodesha, Kan.

The Hawkeye Portland Cement Company, Long building, Kansas City, Mo., is about to start construction on the works at Harvey, Ia., on the Rock Island, Wabash and Burlington railroads.

Okeene, Okla., is to have a cement plant, to be built by J. C. Fisher of Oklahoma, Okla.

Work has started on the erection of a Portland cement plant at Wellston, O., for the Ohio Cement Company.

The Iowa Portland Cement Company, J. C. Burch, secretary, Des Moines, Ia., have just made an addition of \$75,000 worth of cement material property adjacent to their present holdings.

The eighth annual meeting of the stockholders of the Dexter Portland Cement Company was held at Nazareth, Pa., on July 9, and elected the following: President, Conrad Miller; vice president, John A. Miller; secretary and treasurer, Joseph Brobston. The directors are: Conrad Miller, John A. Miller, Dr. Irving A. Bachman, Dr. Thomas Cope and G. A. Schneebel of Nazareth, Morris Pfalzner and George E. Bartol of Philadelphia.

The Nazareth Cement Company, whose stock houses at Nazareth, Pa., were destroyed by fire in the latter part of 1906, is now in shape to again enter the cement field with a high-class product.

C. B. English, formerly connected with the Alpha Portland Cement Company of Easton, Pa., is superintendent in charge of the manufacturing end of the Kansas City Portland Cement Company's plant. Thomas W. Sullivan, a former chemist of the Lehigh Portland Cement Company, has also joined the Kansas City Company's forces.

The Fuller Engineering Company of Allentown, Pa., have opened an office at Kansas City, Mo., with C. M. Lyon in charge. This company, of which Charles A. Matcham is president and J. W. Fuller, Jr., general manager, are old established cement men, and have recently secured the contract for the construction of the works of the Blue Seal Portland Cement Company near Kansas City, Mo.

James L. Stewart of Pittsburg, Pa., has broken ground for an immense cement plant to be erected at Lick Run on the Morgantown & Kingwood railroad, about 10 miles from Morgantown.

The Colton Portland Cement Works at Colton, Cal., are busy on construction work and installation of machinery to increase their plant to 2,500 barrels.

Frank Harbert of the Oriental Cement Company, Lakewood, N. M., reports splendid progress on the construction of the new cement plant at that point, to cost some \$40,000.

The National Portland Cement Company, 413 Mutual Savings Bank building, San Francisco, Cal., will at once construct a \$2,500,000 cement plant at Salinas, Cal., under the supervision of R. H. McWilliams of Durham, Ont.

Consul-general W. R. Holloway reports from Halifax that the total amount of Portland cement manufactured in Canada in 1906 was 2,152,562 barrels as against 1,541,568 barrels in 1905, while the importations into the Dominion during 1906 were 694,503 barrels.

R. P. Davies, E. B. Skinner and Dr. Bartlett of Colorado Springs, Colo., are interested in the establishment of a big plant for the Interstate Cement Company, to be located at Independence, Kan.

Concrete.

Extensive Concrete Operations Started.

NEW YORK, June 22.—On June 20 Mayor McClellan turned the first spadeful of earth beginning the huge undertaking of the city of New York in constructing means of additional water supply. The new system, which is to bring a supply of 800,000,000 gallons of water per day to New York in addition to its present system, will bring the extra supply from the Catskill mountains, which means the construction of reservoirs and an aqueduct 130 miles long, all of which will cost over \$162,000,000 and involve the use of thousands upon thousands of barrels of cement.

Surveys have been made and all is now in readiness to push the work forward with all possible speed; however, the immensity of the undertaking can be better imagined when it is stated that the work will probably be completed not sooner than the year 1930.

In discussing the huge undertaking the New York Times says:

"The main reservoir in which the waters of Esopus, Schoharie, and Catskill creeks and the Rondout river, as well as of several smaller streams, will be impounded, is to be named the Ashokan Reservoir. It is to be formed primarily by the construction of a dam 220 feet high over Esopus creek, which will back up a sheet of water twelve miles long and two miles wide along the creek itself and have a maximum impounding capacity of 120,000,000,000 gallons. Into this great basin the waters of Esopus creek will pour direct, while those of Catskill and Schoharie creeks will be brought under the mountains in a ten-mile tunnel.

"From the reservoir the Catskill aqueduct, eighty miles long, will deliver the water without pumping to the High View reservoir in Yonkers, the location of which is far enough up in the hills to enable gravity distribution to all parts of New York, Brooklyn and Richmond. The aqueduct crosses the Hudson at the Storm King, where the river is 2,800 feet wide, and the tunnel there will be probably not less than 1,000 feet below the surface of the water, for, although the depth of the Hudson at that point is only 60 feet, the engineers found it necessary to go down 600 feet more before solid rock was reached. This under-river construction is one of the most difficult engineering problems facing the constructors of the Catskill system.

"The aqueduct is to be 130 miles long from the beginning of the sources of supply to the lower end of Manhattan and 20 miles more might as well be added to this for the Richmond extension, which will carry the water to the lower end of Staten Island. Estimates have varied as to when the system will be completed. The year 1930 is one date set, but some part of the promised supply will undoubtedly be on tap long before that time.

"The importance of the project, as the city authorities look upon it, lies in the comparative estimates of growth of population and water needs of Greater New York in the next fifteen or twenty years. The present daily consumption of water in this city is 500,000,000 gallons, of which the Croton system will be able to furnish when completed 325,000,000 gallons. It is estimated that by 1915 the population of the city will have reached the 5,000,000 point, requiring a daily supply of not less than 700,000,000 gallons of water, and the experts believe that by 1930 New York, with a population of 7,000,000, will be using a billion gallons of water daily.

"The estimated cost of the Catskill system is \$162,000,000. The Croton system is to cost when completed \$90,000,000."

Cement Workers' Convention.

The semi-annual district convention of Cement Workers of California held its session at Santa Rosa July 3. Over one hundred delegates were in attendance and much business of importance was transacted.

The reception committees met the delegates at Kenwood, on the Southern Pacific, and escorted them to Santa Rosa, where they were highly entertained. The business sessions were held at Germania Hall.

The Council of American Brotherhood of Cement Workers comprises the San Francisco Bay counties and embraces more than three thousand members.

During the business session the following officers were elected: T. E. Keough, president, San Francisco; James Watson and J. B. Stacey, vice-presidents; W. A. Best, secretary; I. L. Samsill, treasurer; L. Flaherty, L. B. Higgins, P. Pearce, trustees; Thomas Doyle, D. Haley, Frank Grebben, W. Meakin, H. J. Plett, executive board.

San Jose was selected as the place for holding the next district convention, and the time was fixed for January 5, 1908.

Eight-Story Stewart Building of Concrete.

HOUSTON, TEX., July 20.—The eight-story Stewart building, at the corner of Preston and Fannin streets, is now well under way. It is probably the first reinforced concrete structure that has ever been erected in Texas. J. W. Martin, who was sent here from Detroit by the Trussed Steel Concrete Company, says that, weather permitting, he will complete about one story a week.

Mr. Martin recently completed a 2,810-foot bridge in Virginia of concrete and he says that this was the first bridge ever constructed wholly of reinforced concrete and that it is a scientific as well as an architectural triumph. Jones & Rue, the architects of the

Stewart Building, recommended concrete construction after a thorough investigation of the subject.

Concrete Doors.

It is confidently expected that concrete doors will soon be placed on the market. It is said that this door will have a maximum strength combined with a minimum of weight, this being accomplished by making the interior of the door where the panels of a wood door are placed thin and edges thickened to withstand the wear and tear of opening and shutting.

Both the hinge and the lock edges are protected by a curious weaving of wire "fingers," and the lock and latch are made secure by a combination of wire and concrete.

Transverse metal strips are used to reinforce the top and bottom, and the hinge edge is reinforced by a flat vertical strip.

The body of the door is made of finely woven wire mesh, suited in size and strength to the purpose for which the door is to be used. Over this the concrete is poured, and the door when molded and dried can be smoothed off like wood. The doors can be stained any color.

To Manufacture Drain Tile.

SANDFORD, FLA., July 18.—Wm. Murray has started a factory for the manufacture of drain tiles out of concrete. J. E. Pace and J. B. Randall will also build factories for the same purpose. Concrete drain tiles are in great demand in this section.

City Track Elevation.

On this page we print a photograph of the Clay street (67 ft. 6 in.) span of the Richmond & Chesapeake railway, in Richmond, Va., as evidencing a perfect form of reinforced concrete construction. The entire viaduct is over 2,800 feet long and ranges in height from 18 feet at either end to 70 feet at the corporation line of the city.

The concrete was of a 1-2-4 mixture of Atlas Portland cement; thoroughly screened, crushed granite that would pass a one-inch ring, and sand obtained by dredging in the Appomattox river at Petersburg for 20 per cent of the work. Subsequently, the screenings from granite crushers was substituted for the sand with admirable results.

The concrete was figured for a compressive stress of 500 lbs. per square inch and shear of 50 lbs., while the steel used was given a tensile stress of 16,000 lbs.; compression, 60,000 lbs. and shear of 10,000 lbs. per square inch of cross section. The modulus of elasticity of concrete to steel was taken as 1:12 and the percentage of steel to be less than 1.45 per cent.

This girder, weighing 54 tons and having a clear span of 67 feet 6 inches, sagged only 1/8 inch when the shoring was removed, indicating the strength and durability of this work.

The design for the entire viaduct was that of the Trussed Concrete Steel Company, of New York. J. B. Greenwood, chief engineer.

John T. Wilson, Mutual Assurance building, Richmond, Va., was contractor for the entire construction work, which was in charge of his superintendent, William Gibson, Jr.



RICHMOND AND CHESAPEAKE BAY RAILWAY. CLAY STREET SPAN, RICHMOND, VA.



CLUB HOUSE IN DENVER, COLO.



RESIDENCE OF DR. CURTIS, MARENGO, ILL.



RESIDENCE AT WILMETTE, ILL.

Three handsome structures in which concrete blocks were employed which were made by the American Hydraulic System.

Three Nice Block Residences.

We are reproducing in this issue a photograph of a residence at Wilmette, Ill., constructed under the American Hydraulic Stone Company's system by the Illinois Hollow Wall and Concrete Company. This is without doubt one of the handsomest residences of its kind in the country. The building has been found to be perfectly dry in the winter and has withstood the severest tests.

Another building is a clubhouse at Denver built by the same system at a contract price of \$3,900, including interior finish in natural woods and weathered oak.

The third is a residence erected by a Dr. Curtis at Marengo, Ill. The doctor built this residence for himself and after living in it four months became so enthusiastic that he and several friends purchased the county rights for the adjoining six counties. The doctor enthusiastically declares that not only is the house perfectly dry but that he has been able to save 40 to 50 per cent in his fuel bills throughout the winter. The house has given perfect satisfaction in every way and other houses of similar character are in course of construction patterned after this one.

The American Hydraulic Stone Company's system has been successful from the start, and some of the largest buildings in the country have been erected with machines built by them.

Advocates Honest Workmanship.

HARVEY, Ill., July 20.—Frank Marshall, the well-known contractor, writes interestingly of the early history of concrete construction and incidentally sounds a warning:

"In the early days of 1856 my father, then living at Fond du Lac, Wis., purchased a machine for molding concrete brick, the parties claiming a patent on the sand and lime used. He put up a building made from this machine, but found it would not stand the winters.

"After investigating he found that there could be no patent issued on sand and lime, so he then invented a machine in which he could place twenty-ton pressure on a brick 4x5x9 by hand power, one man on a lever. He built several buildings, six or seven store buildings, five for himself. Twelve years afterwards the foundation of one side of one of these buildings gave way and the wall was taken down and some of the brick used for a sidewalk.

"In 1868 we moved to Iowa, and we there put up several buildings, but as our gravel was river washed we found it did not give good results, the life being washed out of it. We found to make good concrete we needed good head gravel. We mixed our mortar, letting it lay and become tempered, as father called it, for two or three weeks, then taking the dry mortar we pressed it and could even then show a moisture.

"I see so much work slighted these days by manufacturers of concrete in their rush to produce quantity and not quality in their work, half tamping where tamping is used, leaving voids that in time will tell on the life of the block, half mixing so you see streaks of fat and lean, I call it, in the concrete.

"Last week I was in Chicago and watched the building of cement streets, where the work was being slighted in this way, and in time there will be low spots, cracks and seams come in this work, and the concrete will be blamed, not the shiftless contractor and inspector.

"I was told last winter when in charge of some reinforced concrete work that competition was so strong a man could not do honest work and compete for concrete work. And the same person said the only fault he could find with my work, I was too particular.

The day is coming and coming fast when concrete construction will take a higher place in all our buildings and there will be a premium paid for honesty.

"For I believe on the honest manufacture of concrete depends its acceptance by the public as no other building material. The day when any one can shovel gravel (lime) or cement and rock into a hole and be called concreters and contractors is fast passing away. We need men who know what concrete is when they see it, and will demand the best."

Concrete Construction in Milwaukee.

Milwaukee is a staid and conservative city of vast wealth per capita. This conservatism extended to building operations and Milwaukee builders were a long time accepting concrete, but now that they have awakened to its manifold advantages in construction there are several large buildings being erected by this method. There are probably half a dozen big buildings under construction at the present time in which either concrete foundations are being employed or the whole construction is being built of reinforced concrete. The Northwestern Tile Company is erecting a seven-story reinforced concrete candy factory for the Zeiglers. The Sterling Engineering and Construction Company is erecting a six-story office structure to be known as the Goldstein Building. John Griffith & Son of Chicago have a contract for the erection of the Majestic Theater. This will be fifteen stories in height, of steel construction, with concrete floors and foundations. The Ehlert Construction Company is doing considerable foundation work, but the main part of the work is sidewalks. There are quite a number of plants making concrete blocks, but few buildings are being built in which they are employed entirely, their main use being restricted so far to foundation work and first floors.

Building operations have been hampered somewhat by the uncertain weather, but from now on things will go on uninterruptedly.

A call at the offices of the builders' supply dealers and cement agencies elicited the information that the spring season has been a trifle backward, but prices have been fairly good, and the outlook is bright. The slow season has been attributable to many causes. However, Milwaukee is doing her share of building and will continue to do so, as the city has always enjoyed a steady growth.

Up-to-Date Seasoning.

We have often had something to say upon that most important subject in the manufacture of concrete blocks known as "seasoning." Seasoning consists, according to some manufacturers, in taking a sprinkling can and wetting the finished blocks every day for a week after they are molded. With others, it means the taking of a hose and giving the blocks a thorough drenching several times a day in hot weather for the same period of time. In this way the block is hardened by the alternate wetting and drying out, so that by the process of absorption every particle of cement in the composition can have water enough to bring it into action between the inert particles of the mass and produce as near as possible a uniform concrete composition.

One party of our acquaintance completes the seasoning of his blocks after they are three or four days old by immersing them in a trough filled with water, this being repeated several times and producing about the best results as far as seasoning is concerned that it has ever been our pleasure to observe. This party never considers a block ready for use until it is thirty days old.

Gould Construction Company.

DAVENPORT, IOWA, July 17.—The Gould Construction Company, 517 Lane Building, have several very large contracts for bridges and arches of concrete for various railroads. They are erecting a bridge at Freeport, Ill., on the Illinois Central, and have several other contracts for the Rock Island. The company manufactures a cement brick machine. They have sold quite a number of them, and they have given general satisfaction.

Immense Concrete Station.

What is said to be the largest reinforced concrete terminal station in the world was recently completed in Nashville, Tenn. It is known as the Cummins Station, and is erected for the Merchants' Wholesale Warehouse. The building as completed to date, contains 3,900,000 cubic feet, 500 feet frontage, five stories above the railroad tracks, and each story 134 feet deep. The eighteen foot basement opens on the station platform and is accessible to all tenants. The building is as near fireproof as it is possible to build it. The walls, floors and stairways are all constructed of concrete, with standard fire doors, automatic sprinklers and ample elevators. The Oliver Company at Knoxville was the contractor.

A Concrete Casing for Piling.

A concrete casing is being placed around the piling supporting the Commandancia wharf of the Louisville and Nashville Railroad at Pensacola, Fla., and if the experiment is successful all piling under other wharfs and buildings in this section will be similarly protected against the teredo and other worms and insects. Creosoted piles have withstood the teredo in some localities almost indefinitely. Coleman Meriwether, who has made an exhaustive study of the subject, has charge of the work here. The casing which is being molded near the wharf is about two inches in thickness and is molded in two sections, and when placed together around a piling comes together in such a manner as to be locked with a metal key, and is so tight that it excludes the smallest insects. Each section has a large bell on top, into which fits the following section, and in this manner a piling is encased from the bottom to a point above high tide. The weight of the casing is such that the bottom section is forced deep into the earth, thus preventing the teredo from entering by that means. Nearly 3,000 feet of this concrete pipe, which is similar in appearance to large sewer pipe when it is locked together, have already been placed. The method of placing the concrete piles is accomplished entirely without interfering in any way with the rest of the structure and can likewise be repaired in the same manner by removing the broken section of the pile and allowing all pipe above that to slip down and take the place of the broken section by placing the new section at the top. It is estimated that the various kinds of protections will cost as follows, and it will be seen that the cement pipe is not only the cheapest but the most permanent and indestructible method yet devised for the purpose.

Creosote \$.35 to \$.50 per lineal foot for the tile length of the pile. Ordinary sewer pipe with sand placed over the tops of piles, \$.125 to \$.135 per lineal foot for that portion of the pile which is in the water.

Sewer pipe and concrete, \$.135 per lineal foot for that portion of the pile which is in the water.

Concrete casings placed in forms, \$.15 to \$.50 per lineal foot for that portion of the pile which is in the water, according to the depth of the water.

Lock Joint Cement pipe, \$.100 to \$.115 per lineal foot placed around the pile and filled with sand for that portion of the pile which is in the water.

Build Handsome Concrete Block House.

The Newsome Crushed Stone and Quarry Company, of Nashville, Tenn., has been very successful in building concrete block houses. Rock Products has from time to time printed photographs of buildings which were erected by them. During the past three years the company has built sixty houses in Nashville alone. Blocks which are used in these structures are all made on the Coltrin machine, for which they are the southern agents. They own their own quarry and furnish crushed stone for their own use and also for general sale. The picture which we are reproducing in this issue is a home built by them from plans drawn by the architect in charge of their construction department. It is an eight-room house and the estimated cost is about \$5,000. The woodwork on the first floor is chestnut, pine being used on the second floor. It is equipped with furnace for heating, with both gas and electricity, first class plumbing and bath and cabinet mantles. The entire house is built of blocks made on the Coltrin machine, one part Portland cement and two parts crushed limestone dust in face, and one part Portland cement and four and one half parts limestone screenings in the body of the block. The plaster was applied to the inner face of the blocks without lathing or furring. The cellar is built of concrete, as are also the chimneys, columns, porches and sidewalks. The house is very conveniently arranged. The porch extends around the front and one side of the building. There are very few handsomer houses to be found anywhere than those which the Newsome Crushed Stone and Quarry Company have erected in Nashville. The concrete block industry would be much further advanced if there were more firms like this one.

Concrete Wharf.

CHESTER, PA., July 17.—Work has been commenced on the new concrete wharf which will be started by the Fayette Manufacturing Company on the site of the present pier and when completed it will be one of the most up-to-date wharves ever constructed in this city. It is estimated that it will cost not less than \$175,000.

The wharf will be the first of its kind ever attempted in this section of the country and all the work, even to the piling, will be done by the company at its plant in this city.

D. C. Corson will have charge of the construction. The new dock will be 75 feet wide and 450 feet long. It will be built of reinforced concrete with reinforced piling and the flooring will be a solid slab on the top of a solid concrete foundation. The concrete will be

forced through spirals of steel and the wharf will be so solidly built that it will last for years. The pilings will be driven by an especially constructed pile driver now being built by the Fayette company. The work will be pushed as rapidly as possible.

Lighthouse in France.

A concrete lighthouse was recently completed on the Point De La Coubre at the mouth of the Gironde river in France. It is 225 feet high over all and is in the form of a tapered cylinder. It is 35 feet in diameter at the base and from the base to the focal plane it measures 192 feet.

It has no interior openings except a service room and the circular stair wall eleven and one-half feet in diameter.

The method of construction was quite interesting. The concrete, which was mixed by machine mixers, was brought to the foot of the tower by an endless rope incline and then hoisted in steel buckets. Six radial horizontal lattice girders, thirty-five and a half feet long, supported on the inner forms of the shaft, carried the platform. This was provided with a light conical roof with a frame work of angle iron. It supported an annular outside scaffold suspended from it and also a circular interior scaffold below the bottom of the inside form. The form was composed of four courses of steel shutters provided with interior flanges, while the external form was made of six courses of wooden shutters. As the concrete walls were built up the platform was lifted by means of a jackscrew set upon the walls.

After the concrete had set for three days the outside shutters were removed. The total settlement of the tower was less than one-half inch and the oscillation under a heavy gale was quite insignificant.

The circular main walls are 27 inches thick at the top and uniformly increased to the thickness of 5 feet 10 inches at a point 47 feet above the base, from which point they increased to 35 feet at the base. The maximum pressure is thus reduced to three tons per square foot on the sand which is 7½ feet above high water. Steel beams support the lantern room floor. Near the outer face, the walls of the shaft are reinforced by vertical and horizontal bars four-tenths of an inch in diameter. These are placed eight inches apart on centers embedded in six inches of rich concrete, which is surrounded by concrete made of one part cement and six parts of mixed sand and gravel.

The old light house, which has stood for a number of years, was recently threatened by erosion and the new one was built to replace it, a little further in from the shore. The cost of construction was

\$90,000 and it took nine months to build it. It is supplied with two lanterns, one at the top and the other 18 feet above the base. Below the lantern is an external annular gallery, supported on radial concrete brackets.

A Model Concrete Plant.

One of the most interesting concrete block and brick plants to be found in the East is that of the Abbey-Dodge-Brooks Concrete Company, at Newark, N. J. Both cement blocks and bricks are made in large quantities and the demand at present is much larger than they can supply. Six Pettyjohn machines are used in manufacture of block, while Peerless brick machines form the equipment of this branch of the plant.

A survey of the entire plant and study of the methods employed in the manufacture of their product, at first sight convinces the visitor that the operators of the plant are well experienced concrete men. This is true in regard to the Abbey-Dodge-Brooks Company, for Mr. Abbey is a concrete manufacturer of long experience, while both Mr. Dodge and Mr. Brooks made a special study of chemistry, geology and kindred subjects simply for the purpose of preparing thoroughly for their present business. There is no guess work or rough and ready methods about their business. It is a science and is treated as such.

The company has its city office in the Union building in Newark, and here Mr. Dodge is found in charge. The company makes a specialty of supplying machinery to concrete operators and they have all kinds of block machines, brick machines, mixers, and, in fact, everything which the concrete man needs. Mr. Dodge gives his attention to this feature of their business and he reports enormous sales recently in this line. A branch office is located in Philadelphia in the Builders' Exchange, in charge of E. A. Shallcross, while H. Ude is the company's representative at Suffield, Conn. At both of these places all kinds of concrete machinery are on exhibition.

While Mr. Dodge is giving attention to the machinery end of their business Mr. Brooks superintends and manages the operation of the concrete plant. Being an expert draftsman helps Mr. Brooks to fill the needs of the builders buying his material. In figuring on a job he makes working drawings showing just what blocks are needed and the respective sizes demanded. All of the blocks then made are individually numbered so that the mason will not experience the slightest trouble in placing the block in accordance with the working drawings. This is a

point which might prove invaluable to many concrete operators.

Recent large orders of the company for block and brick include blocks for the Geoffrey Coal Company, a large garage for the Central Automobile Company, at Bloomfield, N. J., and the contract for supplying all concrete to be used in the construction of a number of houses in Newark by the Calvert Construction Company, of Baltimore. A job deserving special mention is the residence of G. Bower, at Newark. The foundation of this is of 12-inch rock faced blocks; bevel-edged blocks are being used on the first story, while the second is constructed of planed blocks stuccoed. All the sills and caps are concrete.

Mr. Brooks, in speaking of present conditions, says that the progress being made in the concrete business in the east at this time is truly wonderful. This can be seen when he states that the demand this year is probably three times as large as last. It is also gratifying to have him state that architects are regarding blocks with more favor and specifications for this class of work are continually growing in number.

A feature of the block business noted by Mr. Brooks is the fact that tool-faced, planed, pick-point, and, in fact, every other block, is rapidly supplanting the rock-faced in public favor. The diminishing demand for rock block is very noticeable, he says.



HANDSOME CONCRETE BLOCK RESIDENCE AT NASHVILLE, TENN. BUILT BY THE NEWSOME CRUSHED STONE & QUARRY CO. AT A COST OF \$5,000.

Will Erect Concrete Block.

WELLSVILLE, N. Y., July 19.—The Jas. Thornton Estate will erect the first modern fireproof business block in Allegheny county to take the place of the brick block destroyed by fire a few months ago. It will be built of reinforced concrete, tile and pressed brick. The only combustible materials to be used will be the wood for doors and frames.

Will Build Concrete Barn.

OTTAWA, ILL., July 16.—F. Barenthin, who lives near Yorktown, Bureau county, will build a concrete barn forty by fifty feet. The walls will be about a foot thick at the base and about eight inches at the eaves. The building will be watched by the farmers in that section with much interest as the high price of lumber is causing many of them to hesitate before building new barns and other farm buildings.

Concrete Office Building.

COVINGTON, LA., July 19.—The old building on the corner of Columbia and Boston streets is being torn down to make room for an up-to-date two-story fireproof concrete building. The structure is being built by Lewis Wherlie from plans by Percy S. Barelli. It will be 60x65 feet, and besides affording room for two stores downstairs, will contain office rooms on the second floor. Mr. Barelli will make the blocks at his factory here.

Concrete Lighthouse Foundation.

The Department of Commerce and Labor has authorized Captain Eels of Maine to build at his own expense a lighthouse at Diamond Shoals, off Cape Hatteras. If the lighthouse is a success and remains standing after five years Captain Eels will receive \$750,000 for the work. The thing has been tried before and only failure has resulted. The saw teeth of Hatteras and the gales of wind make a plaything of the heaviest structure ever towed out to form a foundation. Captain Eels has a new patent, practically unlimited confidence and sufficient capital, and work is already going forward on the construction of the caisson. When finished, this caisson and its contents will weigh about 20,000 tons, concrete and iron, and when in course of time the iron rusts away the solid concrete core will be left. The solid rock in the Atlantic buried thirty feet in the sand will, according to the engineer's calculations, be capable of supporting a 150-foot tower in the heaviest gale that ever blew. If this experiment is a success other lighthouses of similar construction will stand where now a staunch and plucky but sometimes uncertain lightship is stationed.

Concrete Poles.

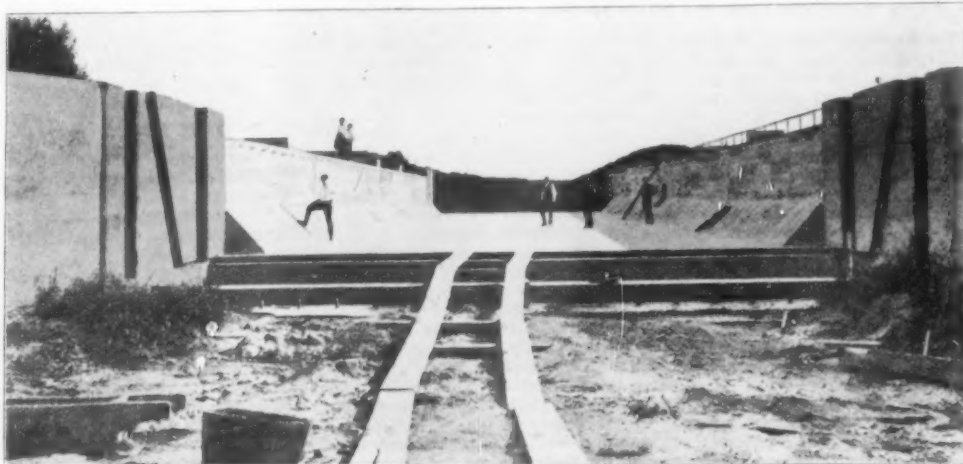
One hundred poles of concrete for transmission purposes have been ordered by a railroad in Canada, and are to be given a thorough trial in competition with wood, which is more accessible at this point than in parts of the United States, where such a trial would be more favorable to the concrete. These poles are made in a mold and in section are square, with the corners chamfered off. A thirty-foot pole, to withstand a weight of 1,000 pounds, will weigh about one ton, while a pole of the same length to withstand a weight of 2,000 pounds will weigh about 1,300 pounds.

The cost of concrete poles varies with the location, but, generally speaking, it is about one-third that of steel. As compared with wood the first cost is greater, but this is offset by the economy of maintenance and by the fact that fewer poles are required to carry the same load. In actual experience concrete poles have withstood a sixty-mile wind, which would have certainly demoralized wooden poles.

Tunnel Companies Merged.

NEW YORK, July 22.—To avoid the duplication of corporate and accounting work, the Pennsylvania Railroad Company has effected the merger of the two companies, which, as subsidiaries of the railroad, have been carrying on the work of tunneling the Hudson and East rivers and of building the terminal stations in Manhattan and Long Island City.

The name of the consolidated company is The Pennsylvania Tunnel & Terminal Railroad Company, and the two companies of which this is the consolidation are the Pennsylvania, New Jersey & New York Railroad Company of the state of New Jersey and the New York & Long Island Railroad Company of the state of New York. Of course there are subcontracting companies at work on the large tunnels and the consolidation only affects the main companies.



CONCRETE INTERIOR OF GOVERNMENT PIER AT HENNEPIN, ILL.
MARQUETTE PORTLAND CEMENT USED.

Concrete Standpipe at Attleboro, Vt.

The immense concrete standpipe recently completed at Attleboro, Vt., is probably the largest reinforced concrete structure of its kind in the world. It is 118 feet in height, 50 feet in diameter, and has a capacity of 1,500,000 gallons. The walls are eighteen inches thick at the base and eight inches at the belt course at the top. The dentiles above the belt course are scuppers, through which water overflows if the tank is too full. The depth of the water is 100 feet. The concrete was made very wet, the mixture being approximately 1:2:4. It is reinforced with horizontal hoops of steel lapped and connected with Crosby guy clips. It is covered with a dome of Gaustavino tile. The tank is waterproof, has been used for about one year, and has given perfect satisfaction.

Work Progressing Rapidly.

ALLENTOWN, PA., July 19.—The concrete work on the foundation for the new Tilghman street bridge is progressing rapidly, and Contractor J. H. Hardner expects to have it finished some time this month. The abutment at the western approach is complete, as are also the majority of the concrete pedestals on the western side of the creek. The support for the iron work of the new structure will consist of two large piers, twenty-six pedestals and two abutments. The machinery in use consists of a large derrick, two stationary engines and a concrete mixer operated by steam power. After the mixture is prepared it is dumped into a steam truck and taken over the rails to the various boxwork arrangements, where it is again dumped on a wooden truck and shoveled by laborers into the boxwork. About forty laborers are at work, divided into gangs. Six carpenters are kept busy all day erecting boxes for the concrete work and razing them after the completion of the work.

Concrete Pipes.

Pipes made of reinforced concrete for transmitting water under pressure have been constructed. These pipes are really one continuous tube, each several hundred feet long. In diameter they are from two feet to three inches, the longest single section being 600 feet. The inside is made smooth, planed lumber being used in the forms.

Steel Plant of Concrete.

TONAWANDA, N. Y., July 19.—The Wickware Steel Company will construct a one million dollar plant on Rattlesnake Island. The trestle is to be erected for the extension of the Central's terminal road in the town to the new plant. The Wickware Steel Company will begin the transmission of large quantities of materials to be used in the construction of its mammoth building and equipments. It is said that 80,000 barrels of cement will be used in the construction, and local contractors say that an industrial village will be built on farm lands adjoining. The Wickware Steel Company owns the land.

Concrete Blocks for Church.

HARRISBURG, PA., July 18.—The Carlisle Building Block Company has had a very busy season. Besides laying quite a number of granolithic pavements, they are furnishing the concrete blocks for the new Trinity Reformed Church at Halifax, Dauphin county. Nine carloads of blocks will be required for the new church.

Bids Wanted.

WICHITA, KAN., July 16.—Sealed proposals will be received by the Board of County Commissioners at the office of the county clerk of Sedgwick county, Kansas, for the furnishing of all materials and labor in building the reinforced concrete bridge over the Arkansas river on Douglass avenue in the city of Wichita, Kan. Copies of proposals, general plans, specifications, bonds, contracts and instructions are to be mailed to Claude N. Cartwright, county clerk, or George H. Bradford, engineer, at Wichita. All documents must be written on blanks furnished by the said county, and filed at or before 12 o'clock noon on July 29 in the office of the county clerk.

New Phelan Building.

SAN FRANCISCO, CAL., July 19.—The James D. Phelan Company will construct a one and a half million dollar steel and reinforced concrete building on the site of the old Phelan building at the corner of Market and O'Farrell streets.

\$30,000 Concrete Block Residence.

PITTSBURG, PA., July 20.—One of the most beautiful and effective examples of concrete block construction is the new home of John P. Harris, the well-known theatrical man and associate of Harry Davis, who has just completed a \$30,000 residence on the commanding heights of West Pittsburg terrace overlooking the boroughs of Crafton and Ingram. The house is of modern order of architecture, and, while not following closely any particular style, such as Colonial or Romanesque, still has a distinctive character of its own. Edmund B. Lang and brother were the architects. It is a two-story and attic building, with finished basement, and is trimmed in white smooth stone, and is one of the stateliest and most striking in the district. It has a large portico extending along the entire front and along the left side and a red tile roof, together with an imposing arch and roof of stone. The house is beautifully appointed and would be a credit to any city.

Municipal Building of Concrete.

BERKELEY, CAL., July 18.—The new plans for the town hall to be erected at Grove street and Allston Way have been accepted. The structure is to cost \$98,868, and will be modern in every respect. It will be built on the French renaissance style of architecture, two stories in height, with a main building and two wings. It will be of reinforced concrete throughout and will house the entire set of municipal officers. It will be one of the best structures of its kind in the county.

Ten-Story Concrete Building.

DAYTON, OHIO, July 20.—Work on the new Commercial building, which is being erected by the Schantz estate on the northeast corner of Fourth and Ludlow, is progressing rapidly, and it is expected that it will be completed by the 1st of March, 1908. It will be constructed of steel and concrete with terra cotta facing for the first, second and eighth floors; the remainder of the building will be faced with brick. Great credit is due to the architect, Albert Pretsinger, for the skillful manner in which he has designed this ten-story pile so as to avoid the long harsh lines which are so frequently found in modern skyscrapers. H. Herbig & Co. have charge of the construction.

Retaining Wall for Ohio Town.

LORAIN, O., July 17.—Fifty thousand dollars has been appropriated by the city council for the construction of a retaining wall on the east side of Black River, from the end of the east government pier to the Erie avenue bridge. The upper 350 feet of this wall will be of concrete similar to that used in the pier and the remaining 700 feet will be constructed of tiling. The government will dredge at the channel opposite the car dumping machine, removing the dangerous hump which has been a menace to navigation for many years.

Will Build New Plant.

SPOKANE, WASH., July 18.—The Spokane Concrete Company have decided to build a \$20,000 plant at 14th avenue and the Northern Pacific tracks. Twenty-five thousand dollars has been paid for the site. The building will be 50 by 150 feet. The new site was chosen because of the supply of sand and gravel which it affords. The Spokane Concrete Company began here about two years ago with a force of three men and a capital of about \$15,000. It now employs an average of 25 men and has property valued at over \$50,000. All of its products are sold either in Spokane or nearby towns and the demand is greater than the supply.

Officers of the company are Allen R. Scott, president; B. F. Strobeck, vice president and manager, and Francis S. Boyd, secretary and treasurer.

In addition to the concrete blocks which are now the product of the plant, the company, when its new plant is completed, will produce tiling. A vapor curing plant will be installed which will enable the company to turn out their product in much less time than it formerly required by the old method.

Edwin Thatcher Talks About Bridges.

GALVESTON, TEXAS, July 17.—Edwin Thatcher of the Concrete Steel Engineering Company of New York City, who has been engaged by the County Commissioners to investigate the causeway bridge and make estimates and plans, is now in the city. He will go into the matter thoroughly and make a report. Mr. Thatcher has had considerable experience in the use of concrete in bridge construction work. For many years he has been engaged in building concrete bridges and is considered a high authority.

Mr. Thatcher in speaking of the subject of reinforced bridge construction in the United States, said:

"The first large reinforced concrete bridge in the United States was built by the firm with which I was connected at the time. It was built some ten years ago at Topeka, Kan., and is 600 feet long. At the time, the bridge was the largest concrete structure in the United States, and I think in the world. Since that time, however, many much larger structures have been built.

"The firm with which I am connected has made plans and is making them for seven bridges at Indianapolis. The first was built three years ago and we completed one last year. At South Bend, Ind., we have five bridges, one of which is completed. We have secured the big bridge to be erected at Milwaukee to cost about \$400,000. It will be 2,088 feet in length, including approaches, and will have eight spans, each 145 feet in length. Our company has completed a big bridge at Jacksonville, Fla., which has thirteen spans, and we have built another bridge at Nashville.

"The largest span bridge we have ever built is at Newark. The span is 132 feet, the longest in any bridge in America. In Europe, however, much longer spans have been made. There is one bridge in France having a span 325 feet in length. In Germany also there are some bridges of large spans, and America has not as yet begun to construct such bridges as are to be found in Continental Europe. However, New York is figuring on a bridge that will have a 700-foot span, and our company is making an effort to get the work."

Mr. Thatcher is convinced that the only successful system of reinforced concrete in bridge work is the Milan system. He stated that some time ago the Austrian Society of Engineers spent \$100,000 in experimenting with various systems, and came to the conclusion that the Milan system is the best. Mr. Thatcher explained yesterday that this system consists of steel ribs at the upper and lower part of the arch and trussed with bars in zigzag shape. The ribs are made up in about thirty-foot lengths, or just long enough to go onto railroad cars, and are riveted together when placed in position. With other systems, Mr. Thatcher stated, the ribs are not trussed, and consequently are more liable to warp out of shape while the concrete is being placed. In many cases the steel bars work away from the concrete so that

the latter does not adhere. With the Milan system, however, the ribs, reinforced by the truss work, never work out of shape and could sustain a great weight even without the concrete. A strong feature in favor of the Milan system is the elasticity which holds the bridge together and sustains great weight even on an uncertain foundation, where with the plain concrete, or not properly reinforced, the structure would crack.

Make Changes in Business.

CLEVELAND, O., July 20.—George Rackle & Son, who until a short time ago were engaged in the ornamental stone business, have made an entire change in their work and now employ cement and concrete exclusively, having found that molds are easier and more profitable things to work with than chisels and hammers. No more fancy stone trimmings are being made, the attention of the firm being directed entirely to the manufacturing of fine lines of art stone and trimmings. The Rackle Company has had a good line of orders this year and reports a prosperous business.



THE BOW OF A STEEL HULLED SHIP THAT SMASHED INTO A CONCRETE PIER AT NEW ORLEANS.

The factory at Superior Avenue and East Thirty-Second Street has been enlarged and additional storage ground has recently been purchased. A mammoth big concrete mixer has just been added.

Steamer Smashed by Pier.

During the high water a strong gale was blowing and a floating log under the surface disabled the steel-hulled tug R. W. Wilmot and she dashed against the concrete approach to the ship slip. A slight crack was made in the concrete that will be easily repaired, but the Wilmot went to the ways with a badly broken and battered nose.

New Concern Buying Machinery.

SALEM, OHIO, July 2.—The Standard Sand and Concrete Company, a corporation made up of local business men of which D. E. Mather is the secretary are purchasing machinery and expect to have everything installed and in working order in the course of the next few months. Everything is up-to-date equipment and the capacity of the plant will be about forty cars of sand per day besides the concrete work they will do.

Need Water Escapes.

The recent fire in Brooklyn in a concrete building showed clearly that while such a conflagration may not have a serious effect on the building, it is desirable that the floor system, principally the landings and stairways, should be so constructed that the water which collects on them during the process of extinguishment may be readily drained away.

In the Brooklyn fire the flood of water escaped down the stairs, causing considerable damage to the stock in the building. Architects should bear this in mind when designing concrete structures, and devise some method so that the water can be carried away without being compelled to run down the stairways.

Will Build a Concrete Church.

St. Alphonsus' church has purchased a lot on Crandall street in Glens Falls, N. Y., on which to build a parochial school. Its specifications call for concrete blocks. The lot purchased for the school has a frontage of seventy feet on Crandall street near the corner of Pine.

Youngstown's Big Concrete Building.

YOUNGSTOWN, O., July 20.—The Central Realty Company will build a four-story reinforced concrete office building on Walnut and East Federal streets. The building will have a total floor space of 84,560 feet. It will be 140 feet by 151 feet.

Another Cement Block Factory.

COSHOCOTON, O., July 20.—S. C. Kissner is interested in a new concrete block concern which is opening up a factory near the end of North Fourth street. The machinery and equipment have been purchased and are now being installed.

Cement Brick for Richford.

RICHFORD, VT., July 17.—C. W. Elkins and C. F. Norris have formed a partnership known as Elkins & Norris, for the purpose of manufacturing cement brick and tile and cement blocks. They have erected a building on the Abercorn road near a large gravel pit, a convenient spring furnishing the necessary water. They have already received their brick machine and will purchase a tile and hollow block machine a little later on.

New Concern Established.

BOULDER, COLO., July 1.—A new concern has been organized at this place to be known as the Granite, Concrete and Fibre Plaster Company with a capital stock of \$50,000. They will manufacture sewer pipe, drain tile, concrete building blocks, do all kinds of concrete work besides handling plaster and other building materials.

Another Concrete Factory for Cincinnati.

CINCINNATI, O., July 19.—The Kroger Grocery and Bakery Company have just closed contracts for concrete stores to be used for factory purposes. Plans for same were prepared by the Reliance Engineering Company. This will be one of the largest concrete buildings yet erected in Cincinnati.

New Warehouse in Omaha.

OMAHA, NEB., July 17.—Work has been commenced on the concrete foundation for the warehouse of the Paxton & Gallagher Company. It is their intention to get down to bed rock. The basement and first story are to be of reinforced concrete, and are to be finished in September.

County House of Concrete.

IONIA, MICH., July 19.—The plans and specifications of Architect E. A. Bowd of Lansing for the new \$28,000 county court house have been accepted. The building is to be of cement blocks with fireproof partitions throughout and tile roof.

The Erie railroad is completing its plans for the construction for the Genesee railroad, which is the cutoff between Cuba, N. Y., and Hunts, N. Y., a distance of thirty-two miles. The company has negotiated a loan of \$2,000,000, which is sufficient to complete the line.

J. N. Miller of St. James, Minn., who acquired the property of the Fort Dodge Clay Works in a land deal a few years ago, recently offered it for sale at auction. The bids were not high enough to suit him and he bid it in at \$8,500. The plant was at one time one of the largest and best equipped in the state, but it has not been run for several years.

Close to Chicago.

We are printing this month a half-tone reproduction of a handsome concrete block residence at Kenosha, Wis. The blocks were made on a concrete block machine and the front porch and balustrades were made in molds. The porch is built entirely of concrete, including the roof, which is of reinforced concrete, wire netting being used for reinforcement. The porch is fastened to the house with angle irons placed in the wall. Sixteen yards of torpedo sand and twenty barrels of cement were used in the construction of the porch.

The residence is very handsomely finished inside with quarter sawed oak.

Joseph Bendt, of Kenosha, the contractor and builder, erected this house for his own residence. He has been doing concrete work in Kenosha for about five years and during that time has put down a number of sidewalks, and built several concrete block residences. He also deals in sand and has quite a trade in shipping torpedo sand. He recently closed a contract for the construction of a concrete breakwater and is now building boats for the pur-

The Cement Block Company is a new corporation at Island Heights, N. J. The incorporators are: W. A. Parker, J. Dunnagan and W. L. Parker, all of Island Heights. The company is capitalized at \$25,000.

A plant for making concrete bricks with waste bi-product screenings from the huge stone-crushing plant of the Little Falls Stone Company at Cooperstown, N. Y., is nearing completion. They expect to have a yearly output of 27,000,000 bricks.

The Tyrol Concrete Stone Company of Warwick, N. Y., has been organized to manufacture concrete building blocks with a capital of \$25,000. The incorporators are Harry V. Wright, Thos. F. Wright and Ferd W. Stanford, all of Warwick.

The Elmsford Concrete Building Block & Land Company has been organized at Elmsford, N. Y., for the purpose of manufacturing building blocks and building materials with a capital stock of \$10,000. The incorporators are Victor E. Dession, Emma L. Dession, 104 Elkins street, Brooklyn, and Christian Keidel, Elmsford, N. Y.

The American Concrete Pole Company has been organized at Richmond, Ind., for the purpose of manufacturing telegraph and telephone poles from concrete reinforced with steel rods. The organizers are James F. Brayley, Jr., of Toledo, O.; W. T. Orr, S. K. Stottler and L. M. Flesh, of Piqua, O., and A. C. Linduth, Wm. Brayley, Ed. Cates and L. E. Brown, of Richmond.

The Haverhill Cement Stone Company, Haverhill, N. Y., has been organized with a capital of \$15,000. The officers are: President, Henry C. Hess, Haverhill; treasurer, Wm. W. Hamm, Haverhill.

The New Bedford Crushed Stone Company has been organized at New Bedford, N. Y., with a capital of \$25,000. The officers are: President, Wilford Smethurst, of New Bedford; treasurer, Albert E. Smethurst.

The Nashville Artificial Stone Company has been organized at Nashville, Tenn. The incorporators are D. M. Huddleston, L. L. Reeder and L. A. Beasler.

Luning & Stanis Company is the style of a new firm with a capital of \$5,000, organized in New York City for the purpose of doing concrete work. The directors are E. C. Luning, Thos. Stanis and Mary Luning, all of New York.

John Hanson, of Hamilton, has leased the cement stone factory owned by F. B. O'Brien, of Lovilia, Iowa, and will commence the manufacture of concrete blocks.

The Concrete Block & Construction Company has been organized at East Medford, N. Y., with a capital stock of \$25,000. The directors are as follows: Samuel Sheeldman, Wm. H. Agricola and Isaac Groschelsky, of Brooklyn.

The Standard Sand & Concrete Company has been organized at Salem, O., with a capital of \$15,000. H. W. Williamson, C. B. Hunt, D. E. Mather, Wm. Dunn and Richard Cole are the incorporators.

The Frontier Concrete Building Company has been organized at Buffalo, N. Y., with a capital stock of \$100,000. The incorporators are: Edwin Puzey, 23 N. Norwood avenue; Van Cleve C. Mott, 275 Maryland street, both of Buffalo, N. Y.; Carl Filsinger, Kenmore, N. Y., and others.

The Spokane Concrete Company has been organized at Spokane, Wash., and will put in a plant at a cost of about \$20,000. They will manufacture concrete blocks and tiling. They have purchased a site convenient to sand and gravel pits.

The Waco Cement Stone Pipe Company has been organized with a capital stock of \$10,000. The incorporators are G. B. Adams, T. J. Sellman and G. W. Satell.

C. M. De Chant has started the manufacture of concrete paving blocks at Juanita, Pa. This is a new industry for the community and it is predicted that Mr. De Chant will meet with success.

R. C. Johnston, of Cottonwood Falls, Kan., and H. A. Sparr, of Wichita, have formed a partnership under the firm name of Johnston & Sparr. They will manufacture building blocks and do all kinds of cement work at Cottonwood Falls.

The Paducah Concrete Block & Pipe Company at Paducah, Ky., has been organized for the purpose of manufacturing concrete building blocks and have opened up a factory at 327 Farley street.

New Era Concrete Block & Construction Company, of Guthrie and Washington, D. C., with a capital stock of \$200,000, has been organized. The incorporators are: V. C. Meyerhoffer, Bartholomew Bonabel, William E. Hayes and John R. Hazard, all of Washington; G. V. Pattison, L. E. and H. W. Pente-cost, of Guthrie.

The Chatham Press Stone and Construction Company has been organized at Chatham, N. Y. The principal stockholders are W. A. Houseman and Edward Houseman. There is a large gravel pit on the property which the company has purchased. They will begin the erection of a building and have ordered a complete outfit of machines and will commence the manufacture of concrete blocks for residence and also sidewalk tiles.

B. F. Middleton has built the first concrete building at South Park, Washington. It has attracted considerable attention.

Ole Paulson, of Pembina, has been awarded a contract for the erection of the Kittson County bank, which will be built of cement blocks. The new structure is to be one story in height, twenty-five by fifty feet in size with full basement. The front half of the building will be used for banking purposes and the rear for telephone office.

The Dayton Motor Car Company will erect a six-story factory building in Dayton, Ohio, on the site of the old building which they are tearing down. The structure will be of reinforced concrete with a court in the center. It will be about one hundred feet square.

A drydock of concrete and granite is being constructed at Hunter's Point, on the Pacific coast, which will hold the record for size when completed. It will accommodate two of the largest battleships at one time. It will be 1,050 feet in length and will cost \$1,250,000.

The Interstate Drainage & Investment Company, of Britt, Iowa, has contracts for erecting several buildings of concrete blocks and has gone into the business quite extensively.

C. Kohler, of Gem City, Iowa, has contracted for the erection of a store building on Front street for M. Korklan. The building will be 24x50 feet and three stories in height.

Fred Johnson, of Sterling, Ill., has been having remarkable success in the manufacture of concrete blocks. He recently shipped two carloads of blocks to Dixon, two carloads to Franklin Grove and three carloads to Prophetstown. In addition to that he sold 1,500 blocks in Sterling.

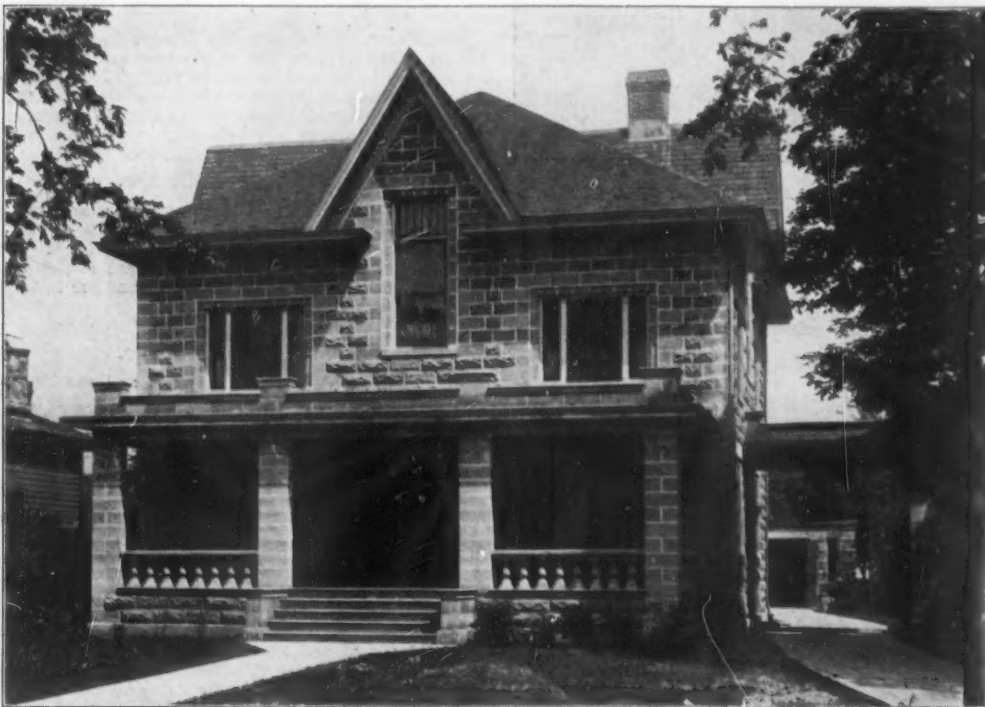
The Early Concrete Stone Company, of Dubuque, Iowa, recently shipped a thousand cement posts to W. P. Adams at Odebolt for use on his big farm. Mr. Adams expects to build about seven miles of fence this year and probably will use all cement posts.

Homer, N. Y., is to have a concrete block depot and warehouse which will replace the old one now being torn down.

Albany, N. Y., is to have a concrete dock to replace the wooden dock now there. One-third of the expense is to be borne by the city at large, and the remainder by the property benefited. Plans and specifications are to be prepared by the city engineer.

Mrs. A. H. Voorhites will erect a \$95,000 reinforced concrete building at the northeast corner of Fern and Van Ness avenues in San Francisco.

The Eaton Artificial Stone Company, of Eaton Rapids, Mich., has contract for building of concrete block house for Andrew Waldron on the Judge Shaw farm a short distance southeast of the old farm house that stood as one of the ancient landmarks in that section of the city for more than half a century.



JOSEPH BENDT'S CONCRETE BLOCK RESIDENCES IN KENOSHA, WIS.

"KOSMOS"

Kosmos Portland Cement is the product of a model plant, using high grade raw materials and under the direction of a staff of experienced cement engineers.

It is guaranteed the equal of any American Brand of Portland Cement and will be found to run uniform



In color, strength and fineness. It is suitable for any class of work and is especially recommended where the requirements are exacting.

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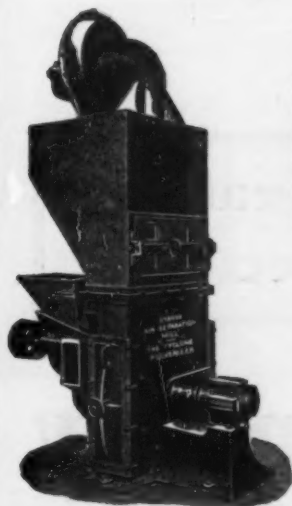
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is made in a dry powdered form.

Added to cement work, of any character, will make concrete work, cemented walls, cisterns, reservoirs, sewers, conduits, etc., etc. absolutely impervious to water and dampness.

IS NOT A WASH

From 1% to 4% to each 100 pounds of cement in different classes of work, will insure dry and waterproof results. Indispensable for cement blocks. Invaluable in the manufacture of cement shingles, tiling, sewer pipes, sills and tanks.

Leaks in old cement work can be effectually closed by the use of our compound. Try a sack if you would see the best Water-Proofing Compound on the market. Prices quoted on car, and ton lots, upon application. Send for full particulars, testimonials, etc.

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LIME

Induced Draft in Burning Lime adds to Kiln Efficiency

WE own the Barrow Patent No. 506029 of October 3rd, 1893, the basic patent on lime burning with induced draft and offer this system especially in connection with our tempered flame process for burning lime with cheap slack coal.

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We make **VALVE BAGS** for these people and many others—why not let us make them for you?

Our Valve Bag eliminates the **STRING** and the **MAN** to tie it. It's a perfect package—a money saver and a money maker.

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The Story of Quality

RECORD: Shipments from January to July were the largest in our history.

CAUSE: The confidence created by our well known policy of producing only a perfect Portland Cement.

RESULT: A steadily increasing volume of orders from those who know and appreciate the quality of Whitehall.

Consequently, established dealers have learned to offer Whitehall to their most particular customers, knowing that there can be no disappointments.

AIM: To produce sufficient Whitehall to meet all demands, realizing that only the highest grade of Portland Cement will hereafter meet with actively increasing call, except for use in the lower grades of rough cement work.



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1719-24 LAND TITLE BUILDING, PHILADELPHIA, PA.

Michigan Distributors
S. J. VAIL & CO., Hammond Bldg., Detroit

Oliver Building, Boston, Mass.
Candler Building, Atlanta, Ga.

Tell 'em you saw it in ROCK PRODUCTS.

Tents of Cement Blocks.

MANCHESTER, N. H., July 16.—Building Inspector Foster has superintended a test of cement blocks by hydraulic pressure to determine the supporting strength of blocks made by various firms. The object of these tests is to secure some basis of regulating structural work in which cement blocks are used. At the present time in Manchester there are no regulations in cement construction.

The test was attended by a number of local builders and four members of the board of aldermen were present, Alderman Bunton being himself a contractor and builder. Whatever regulations are to be made will be framed by the board of mayor and aldermen, hence the interest of the board in the tests.

The blocks put under pressure varied in powers of resistance, ten tons being the lowest pressure under which a block crumbled. The highest pressure withstood was seventy-seven and one-half tons. The ordinary solid clay bricks withstood pressure up to fifty-five tons.

Lawrence A. Connor of Chief Engineer Lord's office was clerk for the inspector. Those present at the test included Aldermen Andrew B. Bunton, Robert Edgar, James E. McDonald, and John J. Connor; J. H. Mendell, John Head, Arthur W. Dudley, C. R. White, Charles A. Bailey, Dr. George A. Campbell, Alexander F. Melrose, James J. Farrell, Byron Worthen, Col. William B. Burpee, Frank W. Sargent, William Hurd, Charles Cheney and Truworthy Norris.

First Prize in the Competition Conducted by the Association of American Portland Cement Manufacturers.

We are printing this month a photographic reproduction of the design which won the first prize in class A 1 at the recent competition conducted by the Association of the American Portland Cement Manufacturers, in which there were more than two hundred designs submitted. Eugene Ward, Jr., 11 East 24th street, New York, was the architect who submitted the winning design and secured the first prize and \$100.00 in cash.

Description of Design.

CLASS A 1.

COST \$1,955.

FIG. 158.

DESCRIPTION.—Outer walls and porch posts to be of monolithic concrete construction. Cellar and porch floors to be of concrete. Outer walls to be 8 inches thick, cemented on the outside and furred with wood furring strips and plastered on wood lath on the inside. Outside walls to have rough cast finish, stained. Chimneys to be lined with flue tile. Cellar under whole house.

All piers in basement, partitions on first floor, and main bearing partitions on upper floors to be of hollow cement blocks, plastered.

Floor joist 2x10"—16" O. C. Rafters 2x6". Minor partitions to be of 2x4" studs lathed and plastered. All floors double with hard pine upper floors. Trim to be cypress stained. Sash of white pine painted. All glass D. S. A. Hardware of good grade. Fireplaces of selected hard burned brick. Roofs shingled with red asbestos cement shingles. Balcony at second story front bedroom to be of 1-16 inch flat steel riveted and painted black.

ESTIMATE.

Excavation	\$ 40
Concrete and cement work.....	890
Carpentry	355
Trim	450
Painting, etc.	80
Hardware	50
Tin work	30
Wiring, etc.	60

\$1,955

Cubic contents, 15,086 cu. ft. including porches.

SEWERS.—Bids will be received until Sept. 11 at the office of the general superintendent, 602-604 Carondelet street, New Orleans, La., for furnishing and laying approximately 110 miles of sewers and appurtenances.

SEWERS.—Bids will be received until Aug. 8 at the office of the president of the Board of Trustees, George Cadogan Morgan, Bloomfield, Ind., for the furnishing and laying of sewers and appurtenances within the city of Bloomfield.

WATER MAINS.—Proposals will be received until Aug. 1 by Clement B. Jones, secretary of the Board of Water Commissioners, Jamestown, N. Y., for the laying of nearly 2,000 feet of water mains.

DAMS.—Bids will be received by the Board of Water Supply until Aug. 6, at the office of the sec-

retary, 299 Broadway, New York, for the construction of the main dams for Ashokan Reservoir, near Brown's station in the towns of Olive and Marbletown, Ulster county, N. Y.

PAVING.—The borough council of Bridgeton, Pa., contemplates the paving of several city streets, at a cost of \$75,000.

FILTERER.—Sealed bids will be received by John D. Young, borough secretary of Steelton, Pa., until Aug. 7, for the construction of a filter plant for Steelton.

Sealed bids will be received until Aug. 1 for the rebuilding of the Broadway viaduct in East St. Louis, Ill. Address the Board of Local Improvements of the city of East St. Louis, Ill.

CONCRETE.—Bids are asked by W. B. Starr, secretary of the East Race Association, of South Bend, Ind., for the construction of concrete bulkheads and head gates on east race of South Bend, Ind. The specifications call for about 1,500 cubic yards of reinforced concrete.

SEWERS.—The Board of Local Improvements, of Edwardsville, Mo., are receiving bids for three granitoid sidewalks and for outlet to sewer No. 5.

PAVING.—The Board of Supervisors of District No. 1, of Fargo county, has instructed Engineer Crabbe to prepare plans and specifications to pave nearly a half-mile, just outside the city limits of Fargo, with creosote blocks on a concrete base. Actual paving will not begin until after the state fair, as the work could not be concluded before that time.

Bids will be received for constructing a wharf and a trestle and coal bunker on the wharf at the United States naval coal depot, San Diego, Cal., until Aug. 20, at the office of the chief of bureau of equipment, William S. Cowles.

SEWERS.—Sealed bids will be received by the common council of Plainfield, N. J., until Aug. 5, for the construction of about 30,000 feet of sanitary vitrified pipe sewer.

SEWERS.—Sealed bids will be received by the common council of the city of Plainfield, N. J., for the construction of storm sewers, including nearly 3,000 feet. Andrew J. Gavett is city surveyor, and James T. MacMurray, city clerk.

DREDGING.—Sealed bids will be received until Aug. 7 at the office of Charles L. Potter, Major of Engineers, Tompkinsville, N. Y., for dredging in San Juan harbor, Porto Rico.

DREDGING.—Sealed bids will be received until July 30 at the United States Engineer Office, Room C-8, Army building, 39 Whitehall street, New York City, for dredging in Newark bay and Passaic river, New Jersey. D. W. Lockwood is colonel of corps of engineers.

WATER SYSTEM.—Sealed bids will be received until Aug. 8, at the office of the Quarter Master, Fort Oglethorpe, Ga., for a deep well and water system at the government target range at Catoosa Springs, Ga. E. D. Anderson, Capt. 12th Cav., Q. M.

RESERVOIR.—Sealed bids will be received here until Aug. 5, at the office of the constructing Quarter Master, Fort Adams, R. I., for the construction of a 400,000-gallon reservoir, three shelters for springs, and the laying of pipes from reservoir to and across Narragansett bay to a connection with reservoir at Fort Greble, Dutch Island, R. I. Willis C. Metcalf, captain and quarter master is in charge of the construction.

DREDGING.—Sealed bids will be received until Aug. 12, by J. C. Sanford, Maj. Engrs., United States Engineer Office, 815 Witherspoon building, Philadelphia, Pa., for dredging in Perrivig Bar.

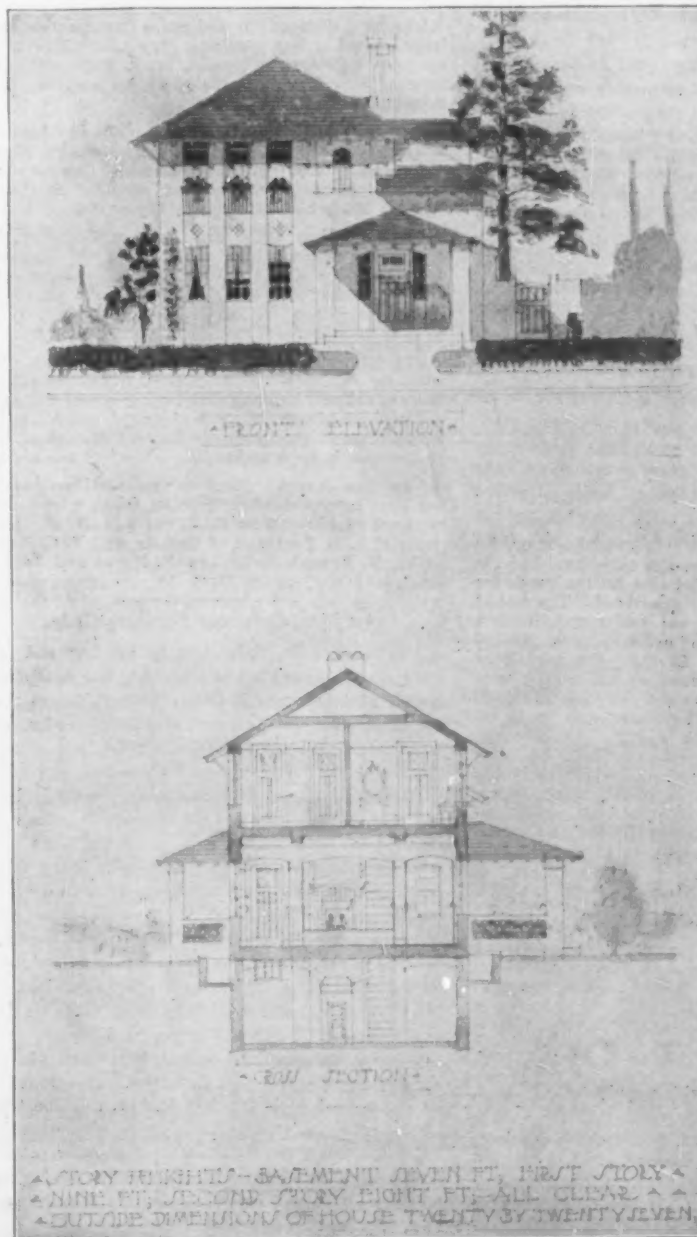
SEWERS.—Sealed bids will be received by A. L. Porter, Secretary of the Borough of Scottsdale, Pa., until Aug. 1, for the construction of a system of sewers for that borough. There will be about 2 1/4 miles of sewer, 8 to 36 inches in diameter.

BRIDGE.—Sealed bids will be received until Aug. 1 by C. F. Hadsall, clerk of Yolo county, at Woodland, Cal., for building a reinforced concrete bridge over Putah, which will consist of three one-hundred-fifteen foot spans.

BRIDGES.—Bids will be received for the construction of four steel highway bridges over Gordon's creek, Hattiesburg, Miss., until July 31. The spans of these bridges range from 65 to 75 feet, and are to be built of the plate girder type, thirty feet wide from center to center. Bids to be made separately for each of the four bridges. J. H. Putnam is city engineer.

DREDGING.—Bids will be received for dredging in Norwalk Harbor, Conn., until Aug. 12, by Harry Taylor, Maj. Engrs.

WHARF.—Sealed bids will be received until Aug. 20 for constructing a wharf and a trestle and coal bunker on the wharf at the United States naval coal depot at San Diego, Cal. William S. Cowles is chief of bureau.



For Added Safety.

NEW YORK, July 18.—George S. Rice, chief engineer of the Rapid Transit Commission, and other engineers have decided to add a new factor of safety to the East river tunnel from the Battery to Brooklyn, and piles are being placed under the long iron tube where it passes through the sand and clay. The ends of the piles rest on the hard pan of rock beneath the sand and insure the stability and rigidity of the tubular steel. The piles are of steel filled with concrete and are two feet in diameter, varying in length from five to twenty feet, as the conditions require. They are placed from thirty to fifty feet apart. The bottom plates of the tunnel are removed and the steel cylinders are sent down to the harder material by means of a water jet. The plates are then replaced. The entire cost of the piling will be less than \$100,000.

Paper Plant of Concrete.

SYRACUSE, N. Y., July 18.—The Consolidated Engineering and Construction Company has secured the contract for the erection of the Skaneateles Paper Company's plant at Skaneateles, N. Y. The plant consists of five buildings, which will be of brick, steel and reinforced concrete. George F. Hardy of New York is the engineer in charge of the work.

Concrete in Indianapolis.

INDIANAPOLIS, IND., July 20.—The Van Horne-Wallia Concrete Stone Company report that they have had a very good early summer business and that the outlook at the present time is very good. The concrete block idea has a very good footing in this city, although prices are not what they ought to be. Like many large cities where competition is keen, the prices are cut below the point where first-class materials and workmanship can be employed at a profit, but it is the survival of the fittest always, and the large companies are still doing business at the old stand and getting good prices for their materials, and will continue to do so.

Next month we will show some of the houses recently built by this company in which the foundation and first floor were erected out of concrete blocks. The buildings are very handsome and have been found to be entirely satisfactory in every particular.

Concrete Operations in Aurora.

AURORA, ILL., July 10.—Brown & Thayer are one of the large concrete block manufacturers of this place and are turning out concrete work on a large scale. They use the Owl brand of cement and have a Clover Leaf mixer from South Bend, Ind., which is driven by a gasoline engine. Their block machines are the Coltrin, Jackson, Mich., and the Simplex, also from Jackson, Mich. Some months ago they furnished the blocks for a fine residence and also for the porch for another house in the same neighborhood. The second story of the former was broken ashler and the first story and porch were built of concrete blocks colored to match the other work. In their yard are some gray blocks, in the manufacture of which they used hydrated lime with cement to get the color to match the balance of the job. They have also manufactured cement building brick and can produce the same faced with white glass sand; in fact, any color and face that may be wanted. In making the inner blocks they are corrugated to take plaster. Some quite difficult work has been turned out, as, for instance, window caps 100 inches in length, cornerstones in one piece and batter work at base of residences.

Concrete blocks for building purposes are also manufactured by Chr. Armbruster & Co. They use the Demorest Little Giant portable mixer from Belding, Mich., and the Brandell concrete block machine. Mr. Armbruster said the demand for his work was steadily increasing and that he was running his plant at its fullest capacity.

J. H. Gearhart is establishing a large concrete block plant at Waldo, Tex.

Bales & Ducheim are installing a plant at Bronson, Kas., for the manufacture of concrete blocks.

Nelson & Burtness of New Richland, Minn., have taken over the concrete tile business of W. F. Rourk.

The Meridian Concrete and Supply Company of Meridian, Miss., has been incorporated for \$5,000. The incorporators are H. T. Sonnot and G. C. Brandon.

Lake Shore Concrete Supply Company has been incorporated at Milwaukee, Wis., by Alvin P. Kletzsch, E. F. Bayer and Charles Marnitz with a capital of \$100,000.

Star Concrete Machinery Company has just been organized at Rochester, N. Y., with a capital of \$5,000 by A. K. Doody, R. E. Byrnes, F. M. Gannin, all of Rochester.

The Hancock Crushed and Building Stone Company has been incorporated at Hancock, N. Y., by G. W. Kozenstein, F. E. Kozenstein and E. W. Cook. The capital stock is \$15,000.

American Cement Waterproofing Company has been incorporated at Camden, N. J., with a capital stock of \$50,000 by Charles A. Warner, Michael Fitzgerald and Gustave H. Liebare.

Hudson River Concrete Company has been incorporated at Brooklyn, N. Y., with a capital of \$25,000. The directors are J. B. Balcomb, R. G. Balcomb and J. M. A. Cook of Brooklyn.

The Cement Products Company of Okeene and Minneapolis, Minn., has been incorporated for \$250,000. The incorporators are C. F. Harlin, N. H. Leighton and E. C. Potter.

The Bruce Ice and Stone Company has been incorporated at Chicago, Ill., for \$10,000 to deal in building materials. The incorporators are E. S. Bruce, Fred J. Joslin and Louis Dulsky.

The United Brick and Sand Company has been incorporated at Camden, N. J., for \$125,000 to manufacture and deal in building materials as well as do contracting. The incorporators are A. L. Colver, J. W. Colver and P. Semon.

The New Bedford Pressed Stone Company has been incorporated at New Bedford, Mass., for \$25,000. The company will deal in cement, brick, stone and other masons' supplies. The incorporators are: W. Smethurst and A. D. Smethurst.

A cement block manufacturing plant has been established at White Earth, N. D., by Lynch & Welsh.

The Paris Concrete Manufacturing Company has been incorporated at Paris, Tex., by John A. Porter, Paul F. Mueller and George R. Hancock.

The Tuckahoe Lime and Lumber Company has been incorporated at Tuckahoe, N. Y., with a capital stock of \$25,000. The object of the company is to deal in lumber and other building materials. The incorporators are W. H. Cooper, C. A. Cooper and C. J. Van Slyke.

The Cement Products Company of Hanover, Pa., has been incorporated for \$5,000. They will manufacture and sell building and paving blocks and other materials made from sandstone and cement. The directors of the company are Howard M. Bange, Guy Bange and J. L. Alulabaugh.

New Era Concrete Block & Construction Company has been incorporated at Guthrie, Okla., with a capital stock of \$200,000 by G. V. Pattison, H. W. Pentecost and L. E. Pentecost of Guthrie, and V. C. Meyerhoffer, B. Bonnell, William E. Hayes and John R. Hazard of Washington, D. C.

An Ideal Concrete Building Code.

A building code, claimed to be the best and most perfect one of its kind in existence, has finally been completed in Cleveland, Ohio. Its originators claim for it all the best features of existing codes, with many additional ones added which the exigencies of the times and modes of construction have demanded.

Probably no more complete restrictions and building rules for the erection of concrete buildings and structures of all kinds are to be found than those contained in this code, prepared by a board of experts after several years of work. It is conservative in some things, but that is to the advantage of the concrete builder himself, for if the rules are strictly adhered to there is little chance of failure, a thing to be regretted by every one concerned, for it defers the public's ultimate opinion as to the usefulness and durability of concrete and cement work.

Concrete buildings are limited, in the first place, to six stories, or eighty feet, in height. This limit is to be maintained until the fact has been demonstrated by several years' time that concrete is all that it is claimed. When the total amount of concrete to be used exceeds seventy-five cubic yards the mixing must be done with machinery, thus insuring a better grade than if mixed by dry laborers.

The code provides that complete and detailed draw-

ings and specifications must be presented to the building inspector before a permit for construction is issued. All concrete walls above the basement level and all concrete floors and fireproofing within a building must be made of standard brands of Portland cements, sand and either of the following inerts: Silica gravel, broken stone, slag, brick, terra cotta or boiler cinders, thoroughly screened. No particle shall exceed two inches in size.

Artificial stone made of Portland cement and fire and waterproof material may be used as a substitute for any natural stone. No artificial stone, however, containing more than 15 per cent of lime or crushed limestone can be used as a lintel or bearing part of any building over five stories in height.

Portland cement building blocks with hollow spaces not exceeding one-third the area of the block and not exceeding nine inches high or eight inches on the beds may be substituted for brick in all buildings.

Trussed concrete construction requires that the work be properly reinforced by the use of armored concrete in which the concrete mixture shall be of such resistance to crushing not less than 2,000 pounds per square inch after hardening twenty-eight days. It must also be of such proportions that the cement shall exceed by at least 10 per cent in volume the voids in the aggregate. The steel reinforcement must be of such a shape and so combined with the concrete that the steel may be made to assist in the resistance to compression, take up the tensile stresses and assist in the resistance to shear along proper structural lines.

Columns composed of structural steel shapes or bars latticed together by riveting and filled in solidly and surrounded by concrete may be proportioned by assuming that the concrete enclosed within the outer flanges or faces takes up a proportioned part of the superimposed load within its limit of stress, provided that the total assumed load on the concrete and steel column combined does not exceed a factor of three if assumed to be carried on the unfilled column when standing free.

According to the code all concrete work must be constructed along proper structural lines. When each panel of armored or reinforced concrete or any trussed concrete member is started it shall be finished in its entirety before shutting down for moorings or for the day's work, or for any other purpose longer than thirty minutes. Unsafe or unfinished panels must be removed before starting new ones.

All centering must be self-supporting and provisions are made that centering shall not be removed for from ten to twenty days, according to the season of the year.

All structural concrete exposed to or worked in the outer air shall not be worked when the temperature is 32 degrees F. or less. Any concrete liable to be exposed to frost or snow before it has attained its permanent set must be temporarily protected. Centers on such work cannot be removed until the season is advanced beyond the probability of a frost.

Provisions are made for elaborate tests of all concrete work, specimens being submitted with reports to the building department for permanent file.

In the use of concrete footings provision is made that the bed shall be not less than twelve inches thick per course. Permission is given for the use of armored or reinforced concrete for footings when deemed necessary.

The code provides that the cement to be used in all building construction must be of the standard Portland variety, either domestic or foreign, which, when tested neat, after one day test in air, shall be capable of sustaining without rupture a tensile strain of at least 200 pounds, and after one day in air and six days in water be capable of sustaining without rupture a tensile strain of 500 pounds per square inch.

The proportions of cement, sand, broken stone or macadam for concrete used in footings or foundations must consist of one part of cement to not more than three parts of sand and not more than five parts of macadam or broken stone. The cement and sand must be mixed thoroughly dry so that the mass shall be of uniform color, and then mixed with water until it becomes a plastic mortar. This mortar is to be mixed with the stone in such a manner that the mortar and macadam shall be a uniform mass. Dry sand and cement may be mixed with wet inerts, mixed thoroughly, and then water added and mixed thoroughly again.

In Cleveland all public and semi-public buildings must be fireproofed and every building in the main part of the city must be fireproof. In a few years, as the old structures decay and are torn down and replaced, the entire city will become practically fireproof. All buildings must have a five-foot space on each side of them if used for public entertainments. The restrictions regarding the building of theaters are very great, making such places entirely safe to what they formerly were.

For the Retailer

The National Builders' Supply Association

Meets Semi-Annually.

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ORDON WILLIS	President
St. Louis, Mo.	
CHAS. WARNER	Vice President
Wilmington, Del.	
G. O. PERKINS	Vice President
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HARRY W. CLASSEN	Treasurer
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Official Organ, ROCK PRODUCTS.

Ohio Builders' Supply Association.

We have received an invitation from the Ohio Builders' Supply Association to attend their summer meeting which will be held at Cedar Point, Sandusky, Ohio, Friday and Saturday, August 16 and 17. The committee in charge of the affair state that there are several matters of importance for the dealers of the state to consider, as well as a good time in store for everyone. The meeting will be held at the "Breakers," the best hotel at Cedar Point and the rates are reasonable. Cedar Point is reached from Sandusky by a three-mile boat trip across Sandusky Bay. From Cleveland the steamer Eastland leaves daily at 8:30 a. m. and a three-hour trip brings one to Cedar Point. This first summer meeting of the association should be largely attended by dealers, for an interesting program will be arranged and while summer is rather a hard time for the builders' supply man to get away from his business, the dates have been fixed and the days arranged so that they fall the last in the week, a most convenient time to get a little outing. The association is one of the hustling organizations of the trade and while it is yet in its infancy it has already done much to uplift and upbuild the builders' supply business in Ohio. The association is receiving much assistance from manufacturers, many of whom have made it a rule to sell to no one but dealers in the state. This is one of the things that associated effort has accomplished and it is one of the important ones. Still there are many others which can only be secured by co-operative effort and every dealer



WAREHOUSE AND YARDS OF JOS. J. MANDERY, ROCHESTER, N. Y.
(THE YARD OFFICE AND CEMENT WAREHOUSE.)

of the state should assist not only by joining the association but by personal work. Let there be a large attendance at this summer outing and it will stir up enthusiasm enough. We believe that every man who attends will be amply repaid for his time and expenses, not only for the attendance at this meeting but for the recreation he will get during the outing. The indefatigable W. A. Fay, who is president, together with Secretary D. K. Thompson, make a team hard to beat and their efforts on the meeting as well as the entertainment features should be well repaid.

Outlook Good.

SPRINGFIELD, Mo., July 18.—The Springfield Coal and Material Company report a very active season in all building material lines. The fact of the matter is, that while Springfield has not had any active boom the growth of the city has been steady and the demand for building material has been correspondingly so.

L. W. Seaman, president of the company, says that the city will shortly do a considerable amount of street paving. They are just receiving a consignment of Sackett plaster boards, which Mr. Seaman predicts will meet with immediate favor, as there has long been a demand for such a commodity, but up to this time they have never been introduced in Springfield.

This company handles a complete line of the various brands of western cements and limes as well as a general line of building materials.

A Busy Season.

KEOKUK, Ia., July 19.—McManus & Tucker report a very busy season in all their lines. They are the owners of the well known Ballinger Stone quarries the principal output of which is rip-rap and crushed stone, although they frequently take out some very good dimension stone for local use. They are also

dealers in builders' supplies and report a very prosperous spring trade.

While Keokuk has not been going forward by leaps and bounds, it has had a very steady growth and the buildings that have been erected are of the substantial kind. Several new, large factories and a great many residences have been erected during the past season.

Mr. McManus has given the subject of concrete construction a great deal of thought. He has been making blocks by the wet process and always keeps a stock of them on hand. He says that the only complaint he can make at the present time is the shortage of labor.

Keokuk Building Up Rapidly.

KEOKUK, Ia., July 19.—Keokuk has been enjoying a period of unprecedented prosperity. There have been several very important industries added to the city within the last year and these have all required large buildings. Kellogg, Birge & Co., are occupying their large six-story reinforced concrete warehouse and office building, which would be a credit to any city. John Young was the contractor. There have been many handsome residences erected during the year also.

McManus & Tucker, who are prominent builders' supply dealers, say that the past season has been one of the best in their history. They also operate a stone quarry known as the Ballinger stone quarries, the principal output of which is crushed stone and rip-rap. They have two Gates crushers, a No. 3 and a No. 5. The output is shipped all over the state.

Jas. McNamara's Sons, at 426 Jefferson street, are dealers in builders' supplies, and report a very active season. They handle a general line of western brands of cement and lime, and say that the past season has been one of the most prosperous in their entire history.



WAREHOUSES AND YARDS OF JOS. J. MANDERY, ROCHESTER, N. Y.
(THE TILE AND SEWER PIPE YARD.)

New Warehouse Completed.

DECATUR, ILL., July 15.—One of the most progressive building material enterprises of this city is that conducted by Daniel Macknet at 600 N. Morgan street. Mr. Macknet handles Alpha, Lehigh, Bedford cement, Elyria wood fibre and Marblehead lime, and with the new office building and warehouse which he has recently completed is now in first-class shape to handle orders of any size.

Death of John Patrick Kane.

John Patrick Kane, president, treasurer and director of the John P. Kane Company, manufacturers of building material and Portland cement, in New York city, died yesterday at his home, Huntington, L. I., of apoplexy. He was born in New Canaan, N. H., in 1849. When 16 years old he went into the firm of William and J. S. Peck of New York, and in 1879 formed a partnership with John M. Canda, organizing the John P. Kane Company in 1893. Mr. Kane was a member of many clubs and belonged to the Church of the Blessed Sacrament, Seventy-first street and Broadway, Manhattan, where the funeral services were held Friday morning. He leaves a widow, three sons and seven daughters.

Move to Larger Quarters.

Samuel J. Vail & Co., 803-5 Hammond building, Detroit, Mich., extend an invitation to the members of the trade to visit them in their new quarters. They write us that they have been obliged on account of their increasing business to secure more space. Their brick business is developing into a large branch and the cement business is also increasing rapidly as the Michigan distributors of Whitehall. They say "Make our offices your headquarters when in this city and meantime keep your eye on Detroit—it's a hustling town."

Up-to-Date Rochester Firm.

We are showing on this page views of the extensive supply establishment of Jos. J. Mandery, Rochester, N. Y., who is one of the progressive dealers in masons' supplies. In a communication from them they say: "We have recently put in about 1,000 feet of industrial railway in the pipe yard, so we can unload the cars of pipe at the proper piles without using teams. Our warehouses are built of concrete, with cement floors, so we can pile material to the ceiling. We have about four acres covered by warehouses and yards on the direct line of the N. Y. C. & H. R. Ry. and the West Shore R. R. Our main track holds twenty-two cars so arranged that we can load or unload any one or all of the cars; in other words, so we can load or unload twenty-two cars at one time. We make about 75 per cent of our deliveries direct from the cars. We have a storage capacity in the warehouses besides our regular line of goods for about 30,000 barrels of Portland cement and we had that much in stock last spring. We are adding to the plant all the time and now have plans and specifications out for an office which will cost from \$7,000 to \$10,000. When completed it will be a model up-to-date builders' supply office. Perhaps it will look more like a bank, but we practically live in our office when we are not at home, consequently propose to have it comfortable."

Large Concern Building.

The Harrison-Walker Refractories Company manufacturers of high grade face building brick whose offices are in the Chamber of Commerce, Chicago, are building a large plant at East Chicago, Ind.



WAREHOUSE AND YARDS OF JOS. J. MANDERY, ROCHESTER, N. Y.
THE TRACK ACCOMMODATIONS.

HOW SUPPLIES ARE HANDLED

Scribo Observes Some More Interesting Sights in Chicago, but the Hot Weather Drives Him Away from His Home City.

Alas, the evanescent heart of man can never find contentment. Here we have all been anxiously standing upon the watch tower, as it were, waiting for warm summer days—the kind that calls the building trades into greatest activity. Now we have them and no mistake. There seems to be no lack of activity, for never in the history of this wonderful city have so many people been employed at one time in the building line as at the present time. Still there are very few large buildings in course of construction, but the number of medium and small building jobs is simply prodigious, undoubtedly making a total volume of materials of all kinds in the process of being consumed equal to 1906 or any other year. It is the busy season with the supply concerns. Every wagon is crowded with delivery orders and it is astonishing how much heavy stuff the modern supply teams can move in one day.

A Pioneer Concern.

One of the oldest men in the trade is William Dee of the William Dee Company, but at the same time he is one of the most active; in fact, so active that he sometimes thinks some younger men are slow and too fussy about their health. So far as he is concerned it makes no difference whether he is walking on terra firma or climbing a ladder, and he can do either on the double quick, if necessary.

This concern does a very large business in sewerage material, both as manufacturer and distributor. It deals in sewer pipes, wall coping, flue lining, drain tile, chimney tops, catch basin covers and lids, cement, etc.

Scribo paid a visit the other day at this company's comparatively new yard on the south side, situated near Seventy-fifth street and Lowe avenue. This is a large depot for supplies and deliveries are made not only on orders, but also to the company's other yards to some extent, as there is ample storage room and the men, not being as driven in filling orders as in case of some other yards situated in the more thickly settled parts of the city, have time to unload cars and store or pile their contents. At the same time, business is increasing in case of this yard and already as much has been done in the line of filling orders as was done during all of last year.

The company manufactures at its plants at Newport and Mecca, Ind., and Akron, Ohio, all sizes of sewer pipe and fittings. It also turns out the Board of Education catch basin cover; also the Chicago city standard cover.

This yard is in charge of William Canty, a native of the Emerald Isle, who has all the social qualities and wit for which its true born sons are noted. He has a valuable assistant named Fan. I discovered this when, after finding no one in at the office,

I started to walk down the yard, and her vigorous barking promptly brought Mr. Canty on the scene. Speaking later on of this same dog he said that while she will follow him about during the daytime, both in and out of the yard, when he leaves to go home Fan never offers to leave the premises, evidently understanding it is her duty to remain and guard the yard until he returns in the morning. When the telephone bell rings she barks until Mr. Canty goes to the office to answer it. This is rather remarkable, for most dogs would howl all night at being left alone.

Strictly a Chicago Industry.

A new industry, yet one which though at present it is being carried on a modest scale, bids fair to develop into a business of considerable proportions, is that of the manufacture of reinforced catch basin covers. Having heard several parties in the trade speak favorably of this make of catch basin covers I paid a visit to Frank A. Caldwell & Co.'s place to learn some particulars concerning his process of interest to the trade.

On calling at Forty-ninth street and Wentworth avenue I found Mr. Caldwell in and, furthermore, quite ready to show me his method of manufacture.



A TRAINED CANINE TOR OFFICE BOY.

On our way he mentioned a curious instance of official conservatism, if not of stupidity, which reminded me of the story of the expressman and the guinea pig, since he stated that some of the city inspectors objected to the use of his covers on the ground that the city ordinances required the use of stone or iron.

He went on to say that Mr. Barnell, engineer of tests for the Rock Island road, told him that cement undergoes a chemical change and has a different analysis after crystallizing, and when set is virtually stone. If this expert, employed by a great railroad company, knows his business, then some of the city inspectors do not know theirs. When the issue is met they must either back down or stand on their original assertion that concrete is not stone. It is said that a little knowledge is a dangerous thing, but in political bureaus words are sometimes used to conceal thought.

Mr. Caldwell said that his covers are made face down in an iron mould, by the wet process. He uses double F limestone screenings and three-quarter inch crushed stone for filler. The proportion is two parts of double F limestone to one of cement, made into a wet mortar, to which is added three parts of No. 3 crushed limestone. Then he tamps and puts in the reinforcing wire—two stands about three inches apart, with eight braces, after which he fills up the mould and tamps again, which wedges the coarse stone in the mould. The wet mortar fills all voids and makes a smooth face.

Right here Mr. Caldwell has a little joker up his sleeve. It took a lot of experimenting to hit upon some means of preventing the covers sticking to the moulds, but he finally overcame this and showed me that he had, for he took out of a mould a cover made two days before, as slick as a weasel.

Now, Mr. Caldwell could have told me what he used, but he didn't. He merely said it wasn't oil, for he had tried that and it didn't work—it would

for dry but not for the wet process, and he employs the wet process in the manufacture of his covers. In fact, cement will eat up oil. He manufactures two sizes of covers—30 inches and 36 inches, all, however, 18-inch lid. The selling price may vary on the part of dealers, same as in case of covers of other material.

Up-to-Date Warehouse at Englewood.

It is a real treat to go over so fine a warehouse as the new three-story building of the Tuthill Building Material Company, which was built expressly for the company on West Sixty-third street, with an eye to handling the great variety of materials in which the company deals quickly and at a minimum of expense for labor. Besides this, it has ample room and all the goods are assorted and piled in good shape, while the premises, owing to the careful oversight of the superintendent, W. J. Johnston, are almost as neat as a big downtown department store. The concern has two fine offices, one on the first and the other on the second floor, the latter fitted up like a bank office. The floors on the ground floor are of concrete.

The secretary of the company, J. Mark Newell, who looks after the shipping and general management of the warehouse, told your representative to make himself at home—go anywhere he might please and ask all the questions which his fertile brain might suggest. The first place I struck was really a feature, for near the entrance the company has a repair shop fitted up with a blacksmith's forge and two men were at work mending cart wheels. Hung up on nails around the shop were all sizes of horse shoes, for the company shoes its own horses, of which when I reached the stable in the rear I found it kept about fifty, some on the first and the balance on the second story. And it was neatly kept, the floor all swept and everything sweet and clean. I noticed that the interior on the first floor was mighty cool, quite refreshing to yours truly. There are chutes, trapdoors and an elevator; a fine new Fairbanks platform scales and a first-class, fireproof vault in the office for books and papers.

The stairways are of concrete and the entire building was constructed so as to secure a low rate of insurance, since iron doors separate the different divisions from each other. It is strongly built also and would need to be, for the company carries an immense stock of the various standard brands of cement in all kinds of packages, rubber and crushed stone, plaster, lath, sand, coping, flue lining, together with metal lath and plaster board—if you don't see what you want in the building line, ask for it and you will find it forthcoming. The Pennsylvania and Rock Island railroads are nearby.



Saw Sewer Pipe Through Which Even a Fat Man Might Crawl, but Not Mr. Taft.

I made a discovery at one of the numerous yards of the N. A. Williams Company of interest to the trade. I was shown by Mr. Humphreys, Sr., as his son, W. A. Humphreys, who is the general manager, happened to be out when I called at the office, a new style of crown for catch basins. It is made of concrete reinforced. Large wire encircles the aperture, equidistant, which makes it very strong, and they cost about 40 cents less. The old fashioned style is rough and breaks easily, if not reinforced. The concern, however, carries sandstone in stock also. The main business of the Williams company, as is well known, lies in sewer pipe. At its plant at Akron, Ohio, which city is famous as a pro-



BIG SUPPLY WAREHOUSE AT ENGLEWOOD.

ducer of sewer pipe, it manufactures all sizes, running from two inches to thirty-six. The company also turns out all the necessary fittings. Mr. Humphreys, Sr., is a veteran in the business and the N. A. Williams Company has been long established here, since it covers a period of thirty-six years. The concern has for yard foreman G. H. Rausch, whose father came from Germany and married in this country. As Mr. Rausch had to close the office to go to dinner Scribo set forth to see where in the neighborhood of Forty-fifth and Clark streets he could refresh the inner man, since reporters have to eat the same as other people. An obliging grocery clerk directed me to a saloon, where with masons, brick layers and other members of the building trades I partook of beer, rye bread and cheese, for which the proprietor would accept but a nickel, the dry goods going with the wet.

A New Concern in the Field.

Dropping in at the office of the Crescent Material Company, corner of Sixty-fifth street and Lowe avenue, I introduced myself to J. G. Coates, who gave me to understand that he was the fill-horse and his son, J. B. Coates, the leader—or, in other words, he furnished most of the capital and the young man got the business. For this work he is well calculated, since he has served an apprenticeship in the building material line beginning with the time he left school. Prior to engaging in business with his father he was with the Builders' Material Company and not only became familiar with the goods but also enjoyed the acquaintance of a large number of contractors. The concern deals in lime, cement, plasterers' supplies, flue lining, coping, sand and gravel. It is favorably situated, being on the Belt Line and consequently enabled to take freight from several railroads without breaking bulk.

Mr. Coates, Sr., is a southern Indiana man, or "Hoosier," in the popular vernacular. He has had quite a varied experience, having been a railroad man and later in life a broker in stocks and grain. Having had a sufficiency of the worry and excitement of a speculative business, he has settled down to one which has a minimum of it. Speaking of this and some allusion being made to prominent financiers, I found that Mr. Coates is a great admirer of the Boston agitator, Thomas W. Lawson. Just as I was leaving his son came along, but had hardly shaken hands before he was off again on the warpath for orders.

The Lady Found Real Clean Sand.

I learned that the Knickerbocker Ice Company had about seventy-five stations, and thinking one might be a fair sample of all of them, I hid to the one on State street near Fortieth and made the acquaintance there of the obliging foreman, Mr. F. W. Connelly, a native of the Hawkeye state. I saw several cars of ice, some of fine sand, while others contained torpedo sand and roofing gravel. Supplies of cement and fire brick were also carried in stock. From a cursory examination of as much of Mr. Connelly's head as was not covered by his

hat, I made up my mind that it contained some facts of interest, and not seeing anything new or startling to write up, I seated myself alongside him on the delivery platform, using a copy of ROCK PRODUCTS for a cushion and to keep the dirt off my pants, and our legs dangled below us. I opened fire on Mr. Connelly by inquiring how they came to attach the name "torpedo" to that kind of sand. He said it was the same sand as was used in making torpedos, consequently likely that was the reason. As to the use of the fine sand, besides the usual appliance of it to plaster, brick work, cement and glass-making, it was good for children to play in. This reminded him of an experience which amused me. It seems one day a lady was driven up in a stylish team and on alighting, wished to learn if she could procure some nice, clean sand—mind, it must be very clean, as she wished it for her children. Mr. Connelly asked if she would favor him with her handkerchief. The lady handed it to him, and, said Mr. Connelly, it was a dainty one. He forthwith rammed it into the fine sand, much to the surprise and disgust of his would-be customer. Taking it out, he shook it and asked the lady to examine it carefully. This she did and not finding any sign of its being soiled, promptly left her order for a supply.



As Mr. Connelly was inclined to be sociable, I asked him where this sand came from. He said it came from the sand dunes which border the shore of Lake Michigan in northern Indiana, some of which are over three hundred feet long, and though immense quantities have been removed, more seems to accumulate. The roofing gravel comes from the same locality and is washed up by the high winds, principally on the occasion of northeasterly storms. The company can only procure it a few times a year, since they have to wait for it to accumulate. This makes it cost more than land gravel, which is simply screened at the pits. The company has been hauling this gravel away for twenty years or more, but the lake keeps on industriously throwing it up on the beaches for the accommodation of the roofing trade. I do not know how much more useful knowledge I might have extracted from Mr. Connelly, for at this juncture a lot of his teams entered the yard, requiring him to get busy, consequently I jumped down and departed.

PEORIA IS WIDE AWAKE.

Peoria, Ill., is very much alive—indeed, aggressive is the correct term, and if the presence of more people than the postoffice would hold on Sunday morning for their mail is an indication of being wide-awake, then the city is entitled to this appellation. Speaking of the postoffice, though it would seem to be in keeping with the size of the place, evidently the government does not so regard it, and plans for an addition to the present edifice, which will require three years to materialize, have been adopted. In the meantime, the Peoria Stone and Marble Works will build a temporary structure of two stories, but having a foundation capable of carrying ultimately a five or six-story office building. The company will receive a nice fat sum for rental of the building, which they have contracted to complete within one hundred days.

Another important undertaking is a new all-concrete wagon bridge to East Peoria, which will require fifteen to twenty thousand barrels of cement in its construction.

In the course of a chat with W. W. Nicol, secretary and treasurer of the Peoria Fuel Company, I learned that the concern has a very large country trade in addition to their local business, which has been built up through the fact that the outside dealers have found it to their advantage to order a variety of stuff in mixed cars, thus avoiding the necessity of carrying large stocks and so tying up capital and securing quicker delivery in these days of slow transportation. That the Peoria Fuel Company have facilities for carrying a heavy stock of staple goods the mere mention of their warehouse room will suffice. In the southern section they have a warehouse (mainly devoted to coal) 80 feet wide and 300 feet long, a pipe yard 80x150 feet and a warehouse in connection with their office 50x100 feet. They are the agents in this section (five counties) for Atlas Portland cement; also handle Louisville, Quincy marble white lime, tiger hydrated lime and bulk lime, Monmouth sewer pipe, Laclede-St. Louis fire brick; also Rock Island, Ottawa. A serious hindrance to building operations in this locality has been experienced in the prevalence of rainy weather for several weeks past. The company is to be congratulated on now having a roomy and handsome office, the present building of concrete block construction having replaced three rambling rookeries which for years had been supposed to be good enough, even if dusty and with poor light. The modern business man is alive to the fact that time is money, and surrounds himself with time-saving appliances and, withal, a whole lot of comfort.

J. W. Mackemer & Co. also get a goodly share of the building materials trade, though lumber is their principal business. They handle Wolverine brand of cement, Tiger white lime, mostly McNutt's sewer pipe and Rapp Bros.' fire brick. This firm also has an office and facilities equal to such as one would find in a much larger city.

Everyone who is identified with the trade is familiar with the name of the company which, as it claims, has plastered the entire country with its products; consequently when I dropped in at the Peoria branch office of the United States Gypsum Company and met their local agent, A. B. Spencer, I was prepared to find that everything that can be produced from gypsum was either carried in stock or quickly obtain-



SCRIBO DECIDES TO LEAVE THE CITY

able from their head office. Incidentally Mr. Spencer remarked that gradually a plan of classification of the great variety of wall plasters and finishes had been evolved, which rendered the work of handling the orders and reporting sales and stock on hand much easier than when he first took charge. Besides the company's brands, United States Perfection Calcined Plaster, United States White Star Moulding Plaster and the line generally, the following are carried in stock: Kelly Island Lime and Transport Company's hydrated lime, Illinois Hydrated, Utica Cement Manufacturing Company's Lehigh Portland cement, Champion calcined plaster.

The Crescent Contracting Company, whose office is in the Y. M. C. A. building, W. C. Evans, manager, are now devoting their attention pretty exclusively to paving and other municipal jobs, and railroad work in concrete, etc.

AT AURORA, ILL.

An enterprising, energetic man is J. E. Salfsburg of J. E. Salfsburg & Co., whose business is best described as that of general contractors. Among the jobs they have on hand is that of the contract for paving Jackson street, comprising over one mile, with combined cement curb and gutter, and vitrified

brick. Anything in the line of concrete and cement work, tile and mosaic jobs is handled. They also deal in all the leading brands of cement and other materials. Just as I was leaving, Mr. Salfsburg handed me his card and asked to have ROCK PRODUCTS sent him for the coming year.

J. F. Harrall & Co., the old established coal dealers, handle Louisville common cement and Monmouth tile as side lines.

Harry Ancutt of Gus Ancutt & Sons, entertained me with some interesting facts concerning Aurora, of which he in common with other citizens is justifiably proud. He also informed me the concern handled the Atlas, Medusa and AA brands of cement and McComb's, W. E. Dee Company's and Lewis McNutt's sewer pipe and tile. They are busy supplying material for several local jobs.

F. R. Gibson, being at Seattle on a visit, of course could not be seen on this trip. His representative told me they were agents for Marquette cement and carried a full line of sewer pipe, tiling, lime and other building materials.

Though mainly interested in lumber, White & Todd handle Chicago AA cement and Streater sewer pipe. This was also the case with S. D. Seamans. For cement the concern deals in Wolverine (Mich.) brand.

Aurora is the home of the great plant of the American Well Company, whose products are shipped to every part of the globe. Among the principal articles of machinery manufactured by the company are lightning well sinking and prospecting, Chapman's patent air water lift system, deep well pumping, and gasoline engines and air compressors.

ON TO MENDOTA, ILL.

The Burlington and Illinois Central roads have done themselves credit in providing such a fine station for this town and they did not stop there, for they laid out the grounds about the edifice in a manner to please the eye and gratify the soul of the traveling man.

Going into the fine, business-like office of James C. Simpson & Co., I found it was a branch establishment of the firm whose planing mill is situated at Galesburg. Naturally lumber is their main business, but the firm deals in all kinds of building materials. For cement, they handle the "Owl" brand. August P. Schmidt is the manager. Unfortunately, my interview with him was brief, owing to an adventure with a barrel of tar just before I met him. In the winter a coat of tar would not be so bad as in mid-summer, and I was not surprised to find he wished to betake himself to his home. I afterwards learned that Mr. Schmidt at his leisure works under Richardson of La Salle (since he has no license) as an architect, through which he is able to secure some good building contracts for the firm.

In Mr. Baumgartner of Baumgartner & Stoldorf I discovered a German Yankee. I say German out of hand, basing the opinion on his name as to this part of the proposition; the rest of it comes from the fact that as our conversation proceeded he suggested we do some trading and for a beginning he wished to swap knives, as I was engaged in providing myself with my usual solace. Then it was watches, hats, umbrellas, pipes, etc. Candor compels me to state that Mr. Baumgartner would each and every time, in case we had come to a trade, have been decidedly the gainer. As I have not been long enough in the country to have become very green, I ventured to suggest I required something to boot before, for instance, I gave up a Panama hat for a dilapidated straw, or parted with a good umbrella for one I would have been arrested for carrying in the streets of Mendota, let alone Chicago. As it was I had some fun with Mr. Baumgartner, though I didn't venture to pronounce his name rapidly. He invited me next time I called to bring some things in my grip that I would be willing to trade with. The concern handles, besides coal, masons' building materials of all kinds, including Chicago AA cement and Monmouth sewer pipe and tile.

LA SALLE AND PERU, ILL.

The cities of La Salle and Peru are so closely situated that it is difficult to tell where one leaves off and the other begins, unless you are on a street car, in which event you have to change at the boundary line. The extensive plant of the La Salle Pressed Brick Company just misses being located in Peru. Dropping in at the office, I had a chat with C. Steinmayer, the manager, and afterwards spent a few minutes in the works, where they turn out pressed



WAREHOUSE OF THE PEORIA FUEL CO.

brick of all colors and shapes, as well as fire brick, though the latter is not manufactured by them to any considerable extent.

Ever since I left Chicago I had run across a number of dealers handling Owl cement and had seen cars placarded "Owl" while en route. I was aware the owl's nest was here and determined to hunt it up. After a short walk I came in sight of an extremely tall chimney and a little farther on a collection of buildings, in the larger of which the owl could be seen even at the distance when my eye caught it, though I could not quite make out the nest. Going into the office, it was hard to believe I had not been transported to Chicago, it looked so cityfied. The affable secretary, Alfred Erbse, invited me to his private office and was good enough to say some mighty complimentary things of Rock Products. In response to my inquiry, he said he did not consider there was any danger of trouble from over-production in the near future, and that as far as the company was concerned it is behind on its orders.

I am so often meeting on this trip young fellows who are genial and obliging that likely it would be too great a tax on the space allotted me to mention many of them, but before I am rung off I will put on record my call on W. H. Hunter's lumber concern, where C. H. Hunter, son of the proprietor, made things pleasant for me. Besides handling German-American Company's cement, they deal in other builders' materials to some extent. (Please note the rhyme.)

La Salle has an enterprising, broad-gauged firm engaged in general contracting, in Keys & McNamara. In talking with Mr. McNamara I learned that the firm is relaying the main street of Mendota—about a quarter of a mile job, costing in the neighborhood of \$28,000—crushed rock foundation with brick top. The firm's specialty is municipal and railroad contracting.

Mr. Stevens of Hunter, Stevens & Co., the lumber dealers, advised me that though they handled German-American and Marquette cement, Marblehead white lime and other materials, their attention was principally devoted to their lumber yard.

If an old-time farmer should stray into the big store of Castendyck Bros. and look about he would wonder "what on airth them fellers was sellin'," for it would scarcely dawn on his bewildered mind that "farmin'" could be done by machinery. In connection with all kinds of farm machinery the concern handles a full line of builders' materials, including German-American cement.

VISITING WITH THE MAYOR OF MINONK.

After my interview with A. B. Kipp I learned he was the mayor of Minonk. That I did not mistrust this while in his office indicates that his business character predominates in comparison with his capacity as the chief official of the city. Mr. Kipp does a large business in lumber of all descriptions; also carries a full line of builders' material and supplies contractors with crushed stone for street and sidewalk work. The brands of cement which he handles are Owl and AA. He sells the Marble Head Company's lime. An heirloom may be seen in his office in the shape of an old fashioned clock, which has been in his family for about 150 years.

F. H. Goodrich is also a prominent lumber dealer of Minonk. He handles Marquette cement, Marble Head lime and Sherwin-Williams building paint.

The West Side Coal & Lumber Company at Bloomfield carries a large stock of staple builders' materials in addition to its main business of coal and lumber. In the course of my conversation with John C. Talbert, the manager, I learned the company handles Lehigh Portland cement and Marble Head Company's Louisiana-Missouri lime.

PEKIN'S SUPPLY MEN.

The Conklin-Reuling Company, dealers in lumber and proprietors of a large planing mill also carry an assortment of masons' supplies. For cement the company sells the Atlas and handles Dee's sewer pipe. L. L. Conklin was away on his vacation, but I met Ferd Meyer, the yard superintendent. As a side line the company keeps a stock of Sherwin-Williams building paints.

Ed F. Lampitt's principal business is contracting for brick work, but he also runs a store for the sale of masons' supplies, where he handles Marquette cement, White Rock and Dolese & Shepard's hydrated lime. For fire brick he sells the Laclede Manufacturing Company's product.

Velde, Roelfs & Co., is a large hardware and lumber concern which handles builders' materials as a side line. For sewer pipe the concern sells the East Alton Stoneware Pipe Company's make.

Clay.

Pioneer Companies Consolidate.

The Laclede-Christy Clay Products Company, the new corporation formed by the consolidation of the Laclede Fire Brick Manufacturing Company and the Christy Fire Clay Company, will be the second largest manufacturer of fire clay products in the United States, both as to capital invested and daily output. The companies forming the merger were both pioneers in the clay business of St. Louis, the Laclede Company having been formed in 1844 and the Christy Company thirteen years later. The Laclede Company owns three factories at Manchester road and Sulphur avenue and the Christy Company has an extensive plant at Morgan Fork road and Gravois avenue. The company's products will include fire brick of every description, flue lining, chimneys, tops, grate settings, gas retorts, vitrified clay products, sewer pipe, wall coping, hollow tile, fireproofing and especially designed brick and tiling for furnace lining.

New Plant in Fine Location.

The Lehigh Sewer Pipe and Tile Company, whose incorporation was noted in this column last month, is now engaged in perfecting plans and specifications for the erection of its new plant at Lehigh, Ia. As outlined, these plans call for a one-press, 18-kiln plant with four-story curing house and such necessary buildings as will properly equip and furnish capacity for the output of a plant of this order. The buildings are located on a recently purchased tract of land 160 acres in extent, from which clay, mixed with the clay of other plants, has been shipped for distances ranging from fifty to 100 miles. The raw material has been given a thorough test and found to be of superior quality. It occurs in a deposit having a working face from forty to fifty feet wide.

The location is an especially good one. There is an abundance of water; in fact, the course of a creek is being diverted to make room for some of the buildings. A coal mine situated within a stone's throw of the plant will be connected with it by means of a short switch or conveyor. Two lines of road run to it and the company is negotiating with the Minneapolis & St. Louis for the construction of a two-mile switch. These connecting lines will be especially valuable, as 3,500 cars per year will be required to take care of the company's product. The plant will be so arranged that the clay can be put in the hoppers at from ten to twelve cents per ton.

As located and equipped the company has several decided advantages over competitors. Its plan of disposing of a limited amount of the stock to dealers will obviate the necessity of a corps of salesmen and insure a ready acceptance of its output, and the fact that expert workmen will be in charge of the several departments will do away with the waste necessarily consequent when inexperienced help is employed.

Fire Clay Deposit in Rhode Island.

A vast deposit of clay of the finest quality was recently discovered in Ashaway, R. I., and a company, known as the Ashaway Clay Company, has been organized for the developing of this resource and for the manufacture of brick and tiling. The clay has been carefully tested and it is shown that the deposit is large and of a very superior quality. A plant will be built at once to have capacity of 20,000 brick a day. Officers of the new company are: George L. Babcock, Plainfield, N. J., president; George N. Burdick, Potter Hill, R. I., vice president; Frank Hill, Ashaway, secretary, and Earle J. Bottomley, Friendship, N. Y., manager.

The Griffin Clay Company, New Windsor, Ill., are installing a 350-horsepower engine, two new grinding pans, and are starting seven new kilns. When this work is complete the capacity of the plant will be doubled. In order to care for this increased output the company is putting up a three-story building, 50x120 feet.

Alex W. Maas of New Orleans, La., was in Chicago last month looking into new manufacturing enterprises and now has under way the organization and establishment of a large fire clay products company in New Orleans for the utilization of Louisiana clay and to manufacture fire brick, buff brick, tiling, sewer pipe, cement and other articles.

The Branstetter Tile Works will reconstruct and greatly improve their plant at Wooster, O.

The Hocking Valley Fire Clay Company, Wilsonville, O., has increased its capital stock from \$75,000 to \$100,000.

The Lyth Tile Company has been incorporated at Buffalo, N. Y., with \$100,000 capital stock. Directors are: Attorney W. W. Chamberlain, Augustus H. Stowell, and Samuel E. and Sarah F. Lyth.

D. E. Myers and E. E. Hendricks, both of Moreno, Cal., are interested in the development of extensive clay deposits suitable for the manufacture of pottery, vitrified pipe, paving brick and other clay products, recently located at Moreno.

The Dalles Brick and Tile Company has been incorporated at The Dalles, Ore., with a capital stock of \$5,000 to engage in manufacturing brick and tile. The leading stockholders are E. M. Williams, W. F. Walther, T. C. Kiethley and Frank Menefee.

The Robinson Clay Products Company, Akron, O., has nearly completed the construction of its large steel building, which will be 432 feet by 160 feet and four stories high. The machinery is being installed and 14 large kilns are in course of construction.

The Heron Lake Brick and Tile Company has been incorporated at Heron Lake, Minn., to manufacture brick, tile, hollow block and fireproofing. A. G. Ochs, Springfield, Minn.; C. K. Willard, Mankato, Minn., and William A. Ochs, Lamberton, Minn., are the directors.

Capitalists of Oakland, Cal., have incorporated the Pacific Clay Company with a capital stock of \$200,000. Machinery has already been ordered, and an effort will be made to have the plant in operation within six weeks. A large fire brick and tile plant is to be built.

A new brick and tile company has been organized at Mason City, Ia., with a capital stock of \$200,000 and a cash paid in capital of \$75,000. Officers of the company are: Dr. C. W. Sanders, Manly, Ia., president; A. L. Rule, Mason City, Ia., secretary, and B. F. Rhodes, Fertile, Ia., treasurer.

A company with a capital stock of \$50,000 is being formed to manufacture dry-pressed and vitrified brick at Mt. Carmel, Ill. William A. Stansfield, Mt. Carmel, Ill., and G. F. Martin of the Cynthiana (Ind.) Brick Company are among those interested. It is proposed to have a plant in operation within two or three months.

Forest City, Ia., is to have a tile and brick factory in the very near future. H. M. Balbridge, Mt. Auburn, Ill., has purchased a tract of land near Forest City for that purpose and will establish a modern tile and brick manufacturing plant there as soon as necessary arrangements can be made for the transfer of his present factory at Mt. Auburn.

The Western Stoneware Company, Fort Dodge, Ia., has disposed of all its property in that city with the exception of its land holdings. Last fall a fire destroyed the company's plant, and recently the company sold off what salvage there was in its yards and has abandoned Fort Dodge as a branch of its several plants.

The California Brick and Clay Manufacturing Company is making extensive improvements at its plant at Antioch, Cal. Three large new kilns are nearly completed and two others will be started soon. In June the company put in a new 200-horsepower boiler and an engine of 120-horsepower. Other additions have also been made. The company manufactures sewer and chimney pipe and terra cotta.

Paving as an industry is said to be exceeded in extent by but one class of engineering operations in the United States—that of railroad building. During the nineteenth century nearly \$1,000,000,000 was expended in this way and taxpayers every year spend \$7,000,000 for new pavements and improvements on old ones. Statistics show that in the ten years from 1890 to 1900 33 per cent of the hard pavements laid were of brick, most of these being in cities whose population did not exceed 25,000.

The National Drain Tile Company, Terre Haute, Ind., intends to build another large tile plant at Streator, Ill., where it recently closed a deal for thirty acres of fine shale land. The main building of the new plant will be 224x80 feet, three stories high, with engine, boiler and machinery rooms 102x40 feet. Twelve 33-ft. kilns will also be erected. All the buildings and kilns will be built of concrete and brick and will cost approximately \$100,000. The National Drain Tile Company is one of the largest drain tile manufacturing enterprises in the world, and this addition will give it a 70-kiln capacity and an annual output of about 6,000 carloads of drain tile. The company expects to have its plant at Streator in full operation by the first of January and is contemplating putting in another plant at Springfield, Ill.

Plaster.

Bring Out Stucco Artists.

The development of the use of plaster along artistic lines has not passed beyond the embryonic stage in this country. The possibilities of plaster in this line are almost limitless. For interior decorative work—walls, ceilings, columns, frescoes, centerpieces and a large number of other purposes—there is scope for many an artist to make a name for himself. Practically the first important work done in material of this class in this country was at the great World's Columbian Exposition held at Chicago in 1893. Since then at the various other expositions the progress made has been quite praiseworthy, and it may be said that the St. Louis fair was a very creditable exhibition of what may be done in stucco even with the comparatively little attention which it has received in the past in this country. Chicago, which is so often censured for its lack of artistic spirit, is truly first in specimens of good plaster work. Several of the large hotels and public buildings have some work of excellent character. The use of stucco is certainly going to be a popular mode of interior decoration and find further development steadily.

The Sand Fillers.

Too great importance cannot be attached to the quality of sand used in making a good plaster. It should be sharp, moderately coarse and almost entirely without clay, as dirty sand will not make as strong a wall, requires more plaster and hastens the setting. The question of the quality of lath used is scarcely less important. To put a well-made plaster over poor lath is surely not good building. White pine lath are the best. They should be free from bark, sap and loose knots. The most satisfactory service is obtained from green water-soaked lath, but if they are dry they may be sprinkled well a couple of hours before the plaster is applied. The reason for this is obvious; it merely allows the lath to swell before the plaster sets and hence prevents buckling and lath cracks. The lath should be placed about five-sixteenths of an inch apart on ceilings and a little closer on side walls to obtain the best results. These are seemingly trivial points, hardly worth special mention, but those who are most successful in this direction are very careful of just such details.

The Monarch Plaster Company has been incorporated with \$200,000 capital stock by Charles H. McNider of Mason City, Iowa, and Miles E. Fisher and John H. Lary of Watonga, Okla. The company will have operations at Kansas City and Watonga.

They Who Make "Selenite."

The Oklahoma Plaster Company, Inc., of Alva, Okla., are the manufacturers of "Selenite" plaster, and they are energetic and progressive business men. The leading spirits in this institution are: C. M. Poorman, who is president of the company; J. M. Bickel, who is vice president; C. A. Poorman, secretary; J. H. Bickel, assistant secretary; W. E. Poorman, treasurer, and B. F. Bickel, superintendent of the mill. Herewith is shown a picture of the company's large new plant, from which is turned out a fine line of high-grade gypsum products.



PLANT OF OKLAHOMA PLASTER CO., ALVA, OKLAHOMA.

News From Fort Dodge, Iowa.

B. H. Ward, manager for the American Independent Gypsum Company of this city, has just returned from a trip along the Pacific coast, where he investigated building operations and conditions. He reports a healthy activity at the present time that bids fair to be increased in the future. The labor troubles and graft investigations at San Francisco have retarded building to some extent, he says, but he is inclined to believe that the atmosphere is clearing now and business in general will soon show improvement.

Mr. Ward was not enthusiastic over the class of building in course of construction at San Francisco. He was surprised to find many small, two-story business blocks being built, indicating that there is a shortage of capital to carry out more pretentious structures.

Speaking of his own business, Mr. Ward said that the plant at Fort Dodge had not been idle a minute since it was started last May. In fact, the odd pieces of work necessary to install and complete the plant has been done at odd times.

The Iowa Hard Plaster Company, which started business this spring, reports a very encouraging trade and has kept its plant going from the first. Although two new plants of liberal capacity were started in this city this spring, both have been employed steadily notwithstanding much competition.

The United States Gypsum Company is running two of its big mills at this place at full blast, and it is reported that the third one will be started in a short time.

Pushing Work on New Plant.

The Nevada Commercial League of Reno, Nev., has donated a fine plot of land to the Marbleite Plaster Company of San Francisco, Cal., in return for which the company pledges itself to erect a plant to cost not less than \$100,000. The work of excavation was begun July 1 and construction will be pushed with all possible speed, as the company is desirous of beginning operations by the first of next year. The material for the plaster plant will be brought from the Mound House, Lovelocks and from a mine north of Reno on the Western Pacific road. The company owns deposits of materials needful in the manufacture of plaster in various parts of the state, and all these mines will be drawn on to supply this new plant.

Once Tried Always Used.

Wooden lath has always been the accepted base upon which to apply plaster, and softwood was long regarded as the best, cheapest and, in fact, only lath for the purpose. The rapidly decreasing supplies of the woods considered best for this purpose have forced the substitution of other kinds, and some classes of hardwoods have been used with good success. However, hardwood is much more expensive and a cheaper material had to be discovered. The users of metal lath found it to be much superior to wood, and many builders are specifying its use. The plaster adheres more readily to this kind of lath, which is nailed directly to the studding.

The Fireproof Plaster Block Company is a new concern, capitalized at \$60,000, which will engage in the manufacture of fireproofing, brick, etc., in the borough of Manhattan, N. Y.

J. W. Richardson, L. B. Wilhelm and Leo Vincent are the incorporators of the Granite Concrete & Fiber Company. The company is capitalized at \$50,000 and will be located at Boulder, Colo.

Roofing.

The National Association of Master Composition Roofers of U. S. A.

C. A. Monks, Louisville, Ky. President
P. LaGueillon, Pittsburg, Pa. First Vice-President
H. C. Swathers, Indianapolis, Ind. Second Vice-President
W. K. Thomas, Chicago, Ill. Secretary and Treasurer

Official Organ, ROCK PRODUCTS.

Review of Roofs and Roofing.

Roof-shelter—was one of the earliest necessities of primitive man. The ability to obtain food was born with him and at first, when, with the unreasoning fear of ignorance, he was afraid of the dark, of the lightning, or the storm or when he sought protection from stronger animals, antediluvian man sheltered himself in caves, rocks or valleys or beneath the friendly branches of trees.

Boughs, torn from the trees and supported on sticks stuck into the ground, were man's earliest roofing material and many of the aboriginal tribes today, sidestepping the question of walls, build their homes of a roof with supports underneath. Our ancestors, not so very long ago, covered their houses with thatch, straw or bark, and it is scarcely more than a hundred years since hand-cut clapboards or shakes of oak, pine or walnut, two or three feet long and put on in double layers, were the most approved roofing known.

In 1840, or about that date, machine sawed shingles began to be used and it is safe to say that at present wooden shingles cover more buildings in the United States than any other class of roofing. Tin then came into quite general use, especially in large cities, only to be replaced by the infinitely more satisfactory pitch, asphalt, cement, gravel and all other kindred roofing compositions.

Still, with our increased knowledge and improved methods, we are inclined to give less attention to the roofs of our dwellings than to any other part of them. Certainly no other part is more important; no other part is so exposed to the strain imposed upon it by heat, cold and storms; and, consequently, the almost constant contraction and expansion.

The Chinese for ages have built their roofs first, perfecting them while the roof structures lie flat on the ground and then hoisting them into place. If an American builder proposes to cheapen the cost of a building he begins by cutting on the cost of the roof; or, even if he has no special need of economizing, he often adds superfluous ornamentation to exterior and interior of the building while he constructs the roof of faulty material or slights it in execution of design. It is not at all uncommon to find the valleys and gutters of a new and otherwise very good building so poorly graded and pitched that after every rain water stands in pools until evaporated or else finds its way through.

That this is a mistake is self-evident. The construction of the roof, the material that is to cover it, and so protect the building and its contents, should receive due consideration with every other part of the building. A durable roof, one that is made of honest materials, weatherproof, fireproof and easily laid, is the kind that up-to-date builders and owners want. Most of the asphalt, cement, concrete, slag and coal tar pitch preparations are practically fireproof, impervious to water and—one or the other of them—are adaptable to any shape or size of roof. Moreover, considering that the cost includes risks incurred throughout the time of service of a roof and the total expended on repairs, such are the cheapest kind of roofs obtainable and more nearly satisfy the demands than any other roofing known at present.

"The best is nay too goode," an old Scotch axiom, applies particularly to the roofing proposition whenever and wherever it comes up for consideration as the construction of a building of any class approaches completion. There is no place, perhaps, where the proof of the old saying that "The best is the cheapest" will so quickly and surely develop as in the purchase of roofing materials in the shape of the finished roof.

Architects Neville & Bagge, 215 W. 125th street, New York, are preparing plans for a sixteen-story apartment house, 100x125 feet, for the A. C. & H. M. Hall Realty Company. The building will have a slag roof.

Architects John B. Snooks' Sons, 73 Nassau street, New York, have completed plans and are receiving estimates for a mercantile building for George A. Hearn. It will cost \$150,000 and will have asphalt roof.

D. H. Burnham & Co., architects, 15 Jackson boulevard, Chicago, are completing plans for an office building at Houston, Tex. It is to be 100x150 feet in size, will cost \$500,000 and will have composition roof.

Architect Frank V. Newell, 185 Dearborn street, Chicago, has the plans completed for a hotel building for the Wenonah Building Company, at Bay City, Mich. The building will be 195x100 feet and will have composition roof.

Hermann Kretz & Co., architects, of St. Paul, Minn., have plans for a store and flat building. It will have gravel roof. Matt Lighthouse & Son, St. Paul, have the general contract.

Derrick Hubert, Menominee, Mich., is architect for the three-story county agricultural school to be built at that place. The building will be 50x90 feet, will have a felt composition roof and will cost \$17,000.

Architects Ballinger & Perrot, 1200 Chestnut street, Philadelphia, Pa., have plans completed for an addition to the factory of the Bernstein Manufacturing Company. It will have slag roof.

J. S. Kunkle, 1218 N. 59th street, Philadelphia, has plans for a three-story factory building, 35x100 feet, to have slag roof.

Ambrose West, Plymouth, Pa., is having plans prepared for a hosiery mill, 100x130 feet, at Ashley, Pa. Slag roof.

Samuel J. Prescott Company, 700 13th street, N. W., Washington, D. C., has the contract for the construction of a dormitory at the Mt. Vernon Seminary. The building will be 25x52 feet and will have slag roof. Harding & Upman, 729 15th street, N. W., are the architects.

Fred T. Lack, Mobile, Ala., has prepared plans for a 22-stall roundhouse for the Mobile & Ohio railroad, at Jackson, Tenn., to cost \$50,000. Composition roof. Address, C. F. Blue, superintendent of ways and structures, Mobile, Ala.

Harding & Upman, Washington, D. C., are commissioned to prepare plans for a dwelling at 1741 P street, N. W., for Robert M. Moore. Slag roof.

Louis H. Emmert, 1110 15th street, N. W., Washington, D. C., has the contract for six stores which are to have slag roofs.

Ira A. Worsfeld, 3 Dodge building, Waukegan, Ill., has prepared plans for a hall, 45x80 feet, for the Sivuttaja Temperance Society. Composition roof.

W. A. Decker, St. Clair building, Marietta, Ohio, has prepared plans for a four-story Masonic temple, 67x90 feet. Composition roof.

Herman Miller, 1420 Chestnut street, Philadelphia, Pa., has plans for three additional stories on the Medico Chirurgical Hospital. Slag roof.

Perley Hale, 134 Clark street, Chicago, Ill., has prepared plans for a flat building for A. L. Howard, 234 LaSalle street. Composition roofing. Architect Hale also has plans for a flat building at 65th and Justine streets, for J. H. McDonald, 762 E. 63d street. Composition roofing. He has finished specifications for a store building to be erected at Riverview Park; composition roofing; bids will be received by the owner, F. V. Wolcott, 228 Waveland avenue.

Brielmaier & Sons Company, Milwaukee, Wis., have completed the plans for a church building to be erected at Stuart, Guthrie county, Iowa, for the All Saints Roman Catholic congregation. It will be 72x120 feet and will have a tile roof.

H. C. Hengels, of Milwaukee, Wis., is drawing plans for a stock house to be erected at Waukesha, Wis. Composition roofing.

A new store building will be erected at 738 First avenue, Milwaukee, Wis., for Leon Franklin, of that address. A. W. Guthat, 642 Sixth avenue, is the architect. Building will have composition roofing.

The Henry Field Seed Company, of Shenandoah, Iowa, will be ready for figures about July 1, on a \$25,000 building with concrete roof.

The First National Bank, Hawarden, Iowa, will erect a two-story, 50x70 feet, brick bank building. Gravel roof.

Architect Albert Schippel, Mankato, Minn., is preparing plans for a \$7,000 store to be erected for S. A. Swanson, of St. James, Minn., and another for Minton & Warren, Mankato. Roof, in each instance, will be composition.

Architects H. Messmer & Son, Milwaukee, Wis., have prepared plans for a double store building to be erected at Kewaskum, Wis. Composition roofing.

Sand-Lime Brick

Chemistry of Sand Lime Brick.

GEORGE F. RANSOM.

It has been claimed by some that there is no chemical reaction during the steaming of sand lime brick. This, however, has been only an arbitrary statement made without show of proof or without a substitution theory for the hardening that does really take place.

We know that the brick when taken from the press are soft and easily disintegrated. In fact, they only hold their form by virtue of the natural cohesion of any damp mass after the particles have been closely pressed together. We also know that these same brick when they come from the hardening cylinders a few hours later are hard and even stand compression strains of from 2,000 pounds to 5,000 pounds per square inch.

Some change must have taken place. Now there are but two kinds of changes known to science. One is the change in the state or condition of matter and the other is the change in the relation of the component parts. The first is called a physical change and the second a chemical change.

Is the change undergone by the brick in process of steaming a physical change? Let us see. If it were it must be a characteristic of one or the other of the materials used; namely, sand or lime. A physical change could not be dependent on the presence of both of these constituents. Either one or the other of these materials would show the same physical phenomena alone as mixed. We know, however, that neither lime hydrate alone, nor sand alone, either compressed or otherwise, will show any tendency to harden under steam pressure. Therefore we have eliminated the possibility of the change being a physical one and it must naturally take its place as a chemical reaction.

It now rests with us to prove what kind of a chemical change does take place. Some have claimed that the hardening is similar to the hardening of mortar. The hardening of mortar is due almost entirely to the combination of the carbon dioxide in the atmosphere with the hydrated lime and thereby changing it back to limestone. The new compounds, calcium and magnesium carbonates, form into crystals, which intermesh and form a very compact solid mass. This change is very slow, requiring years for completion. In the sand lime brick we have a change occurring in a period of ten hours and under conditions where there would not be enough carbon dioxide present to produce even a thin crust on the brick. We also know that the brick after steaming contains practically no more carbon dioxide than the materials did that the brick were made from. Therefore the change is not due to carbonation.

Let us try now to build up a theory and then see if we can prove it. We know that the main element in lime is calcium, and that it is a base—that is, will combine with acids. We know, too, that it belongs to a class of bases called alkaline, having a very strong tendency to combine even with very weak acids. We know that sand is silicon dioxide and that it is acid in its nature and will combine with bases just as carbon dioxide does, only it is not so strong in its tendency to combine. We know that it does combine with the alkaline bases. We know that these alkalies will combine with the silica or silicon dioxide even at low temperatures in presence of moisture. It is not reasonable to suppose, then, that the silica of the sand will, under steam pressure, combine with the lime.

Our theory will be that the steam and lime act together on the sand to form a compound containing water, silica and calcium, known as calcium hydrosilicate. Now let us see if we can prove this in any way. If this new compound did exist and we could take the hydrosilicic acid away from the calcium we would find it quite different from the silica of the same and yet could be changed back by expelling the water that it contained. This I have done in the laboratory, which proves that a compound of water and silica does exist in the brick in combination with some base.

Now let us see if the lime has undergone any change. Lime in the form of hydrate will combine with sugar, but I find that in the steamed brick the bulk of the lime will not combine with sugar; therefore it cannot be in the form of a hydrate.

If we now take out all of the lime that is in the form it was when it was mixed with the sand and then extract the compounds that will dissolve in hydrochloric acid we find that we have calcium and silica in solution and in proportions that admit of the possibility that they were combined.

Calcium hydrosilicate is of a tough, rather plastic, nature, and if formed on the surface of grains of sand closely packed together it would act as a glue to hold them together. It would in time tend to lose its water of combination and become harder and more brittle. This we find to be the case in the sand lime brick. As the brick become older they become very much harder and have not the same elasticity as the new brick.

Therefore I claim that a chemical change does take place during the steaming and that the bonding material is calcium hydrosilicate.

Explosion in Brick Plant.

SCHENECTADY, N. Y., June 29.—A ten-ton steel cylinder, loaded with brick of equal weight and filled with steam at a pressure of 120 pounds, at the plant of the Schenectady Sandstone Brick Company was opened by mistake this morning without first reducing the steam pressure. Naturally it exploded. The cylinder head killed two men, wrecked a portion of the plant, twisted a steel water tower into scrap iron, wrecked a big water tank and windmill and deluged the scene with water.

The big cylinder, five feet in diameter and forty feet long, went through the end of the building and a pile of brick five feet thick, across the highway, hit a carload of coal and a telegraph pole a glancing blow, killed a track repairer and skidded up the Delaware & Hudson track 500 yards from its original position.

New Plant in Operation.

VICTORIA, B. C.—The Silica Brick and Lime Company's plant at Parsons Bridge is now in operation and manufacturing about twenty thousand brick per day. George H. Bradbury, who is the superintendent in charge of the work, states that these brick have become popular for building purposes in Manitoba and many of the newest buildings have been constructed with them. Mr. Bradbury is making arrangements for the installation of a plant at Calgary.

Plant Destroyed by Fire.

HASTIE, IA.—The Granite Brick Company at this place was recently destroyed by fire, the entire plant and buildings being totally destroyed. The machinery also was damaged. John F. Keefner, the superintendent, states that the plant will be rebuilt at once, and they have enough brick on hand to supply the immediate needs of their customers.

May Establish Brick Plant.

HUTCHINSON, KAN., June 25.—The Commercial Club of this place contemplates the erection of a sand lime brick plant here. A test is to be made of the sand in the Arkansas river and other places in the vicinity, as well as on the lime, to see if the products contain qualities that would make good sand lime brick. There is no brick plant of any kind here, and as there is a large number of brick used a plant would easily find a market.

Association Booklet Ready.

We are in receipt of a communication from Harry de Joannis, secretary of the National Association of Manufacturers of Sand-Lime Products, in which he states that "the volume of our proceedings for 1905 can now be obtained bound in cloth, and should you receive inquiries for these the price is \$5 per copy. The work contains 278 pages of valuable technical matter of special interest to those engaged in manufacturing sand-lime products or about to do so." This is a very commendable booklet and we recommend it to those interested in the business.

The Granite Pressed Brick and Crushed Stone Company has been incorporated at Tucson, Ariz., for the purpose of manufacturing brick. The capital stock is \$200,000, and the incorporators are L. G. Swales, J. Breen, E. G. Washington, H. A. Hanson, J. W. Lynch, S. R. Dixon and Thomas Griffin.

George F. Ransom has taken offices in the Ashland block, Chicago, and will conduct the sales department of a Michigan City concern engaged in the manufacture of sand-lime brick. He is meeting with quite a success in introducing the white brick in the Chicago market.

From Our Own Correspondents

PHILADELPHIA, PA.

PHILADELPHIA, PA., July 15.—A decided improvement is noticeable in the cement situation since the weather became settled. With the exception of a few of the larger and some of the smaller concerns, the majority of cement mills are working full time, and the outlook for future trade is promising. Some of the large plants have shut down in order to make improvements, after which they will resume operations with an increased capacity. The erection of reinforced concrete buildings goes on steadily, which is proof positive that this method of construction is becoming more popular every day.

The condition of the lime market holds firm, and as the building industry is now at its height, all supplies appertaining to this work are in good demand, and satisfactory reports come in from all sides.

No complaints are heard from the gravel and sand men, which argues continued prosperity in their line. Work is being pushed to make up for the backward season.

The Vulcanite Portland Cement Company, 1230 Land Title building, reports very busy; they are evidently satisfied as to trade conditions. Their mills are working full capacity and they speak well of future outlook.

The Bonneville Portland Cement Company, 2029 Land Title building, is a very busy concern; they look upon present cement situation with favor.

The Coplay Cement Company, 518 to 520 Pennsylvania building, manufacturers of Portland cement, at Coplay, Pa., reports business moving along in excellent style. They have no cause to complain at present, and report their mills active. Their new plant, which was started about June 1, is working full force, and shipments are already being made from there.

The Edison Portland Cement Company, 1607 Real Estate Trust building, reports business as having improved very much since the advent of seasonable weather. They have shut down all their departments, except the shipping and construction, in their plant at New Village, N. J., as extensive improvements are in contemplation. They expect to resume on August 1, with an increased capacity of 40 per cent or over.

The Atlas Portland Cement Company, 112 North Broad street, reports business as having opened up well during the last few weeks, and the outlook promising. Philip Zollinger, their Philadelphia representative, has just spent a pleasant ten days' respite from business at Beach Haven, N. J.

The Association of American Portland Cement Manufacturers will hold their next meeting at the Marlborough and Blenheim hotels, Atlantic City, N. J., on September 9, 10 and 11, arrangements for which were recently made by Earle Bottomley, assistant secretary of the association.

R. C. Patterson, vice president and general manager of the Union Portland Cement Company, of Kansas City, Mo., recently spent a few days in Philadelphia, calling on the trade and at the office of the Association of American Portland Cement Manufacturers.

Cyrus Borgner Company, extensive manufacturers of fire brick and clay retorts, Twenty-third, above Race street, state that there is nothing in the way of especially large operations to report at this time. They are keeping fairly busy and like the outlook for future trading.

The Master Builders' Baseball club and the Lumbermen's club will play their annual game on July 19 at the Athletic grounds; every effort is being made to secure the incomparable Rube Waddell to umpire the game. These annual contests usually create a great deal of interest among the builders, supply men and lumber industries, as the proceeds are always donated to worthy charities. Up to 1906 over \$4,500 have been handed over to the Red Bank Sanatorium, the Children's Country Week and the Philadelphia Modified Milk Association. Benjamin K. Nusbaum, Philadelphia representative of Toch Brothers, New York, is manager of the builders' club, and

John J. Rumbarger, of the Rumbarger Lumber Company, of the lumbermen's club.

New Supply Concerns.

The National Slag Construction Company was incorporated under Delaware state laws on July 6, by Philadelphia parties; the capital stock is \$300,000.

The Masontown Construction Company, Masontown; capitalization \$10,000.

The Pittsburg Silica and Brick Company, Pittsburg; capital \$20,000.

The John J. Bailey Company, Philadelphia; capitalization \$1,000,000.

The Cement Construction Company, Harrisburg; capital \$5,000.

The Penn Vitriified Brick Company, Cameron; capitalization \$100,000.

Dr. Albert S. Rabenold, very successful as an organizer of cement and slate companies, died recently at Allentown, aged 47 years. He was a graduate of the Pennsylvania College of Dental Surgery and practiced in Allentown, Slatintown and Lehigh. He retired from his profession ten years ago to devote his attention to the cement and slate business.

Toch Brothers, of New York, with branch in the Builders' Exchange, Philadelphia, of which Benjamin K. Nusbaum is manager, report business running along smoothly and the outlook good. This concern manufactures a new material called Toxement, for waterproofing concrete against pressure, and claims that there is absolutely no leakage, not even a moisture, perceptible when Toxement has been used.

To Be Fully Investigated.

A serious accident occurred at the building operations going on at 1426 Washington avenue, on July 10. A four-story reinforced concrete building in process of erection for Bridgman Brothers, through, it is supposed, a criminal carelessness somewhere, collapsed, killing two workmen and seriously injuring some fifteen or more. The building fell about 1:45 o'clock without warning to the forty-three plasterers and laborers working in the basement and on the several floors. Many men were at work upon the roof, where the last concrete girders were being built in the northern end of the building. There was a sinking of the northeastern portion, then an almost total collapse of the structure followed. Those who were working on the roof saw the sinking and were able to make their escape by leaping to the buildings' adjoining. The laborers on the lower floors were either killed or buried under the ruins. It is impossible, at this time, to obtain intelligent information as to the cause of the accident. The concrete is claimed to have been laid in the ratio of one part cement, two parts sand and four parts crushed stone, as is required, and the correctness of this statement will be ascertained by the proper analysis. There is a report that the foreman gave orders that only every other prop which supported the structural members should be removed, but instead of obeying orders, all the props were heedlessly taken away, leaving the partly hardened concrete entirely unsupported. Some claim the foundation for the building was not deep enough and the spot on which the building stood is made ground. The coroner will call a jury of expert concrete men, as the only means of ascertaining the true cause of the disaster.

Doings of the Architects and Builders.

Moore & Co., Incorporated, were recently granted a permit for the big factory building for the Wolf Company at the southwest corner of Twelfth and Callowhill streets. The building will be seven stories and basement, of reinforced concrete, faced with brick, to measure 105 by 135 feet, and will cost about \$144,000. The plans are by Stearns & Castor, architects.

Ballinger & Perrot have completed plans for a large addition to the plant of the Victor Talking Machine Company, at Second and Cooper streets, Camden, N. J. The addition will be a six-story V-shaped structure of reinforced concrete, faced with pressed brick, and will cover an area of 194 by 172 feet. This addition will add about four acres of floor space to the present plant.

William Steele & Sons' Company are preparing plans for a six-story slow-burning factory building at the northeast corner of Noble and Darien streets, measuring 50 by 110 feet, for S. Roseman & Co., trimming manufacturers.

Cramp & Co. have plans posted from a New York firm of architects for the large high school building to be erected in Newark, N. J. The building will be four stories high, with a basement; will have an exterior of brick, stone and terra cotta, and will measure 100 by 200 feet; cost, about \$500,000.

At a meeting of the commissioners of Lehigh and Northampton counties the Bethlehem borough authorities and the Lehigh Valley Transit Company decided to replace the condemned Broad street bridge, at Bethlehem, by a new \$100,000 one of arched concrete.

BOSTON, MASS.

BOSTON, MASS., July 14.—The demand for building materials has been of moderate proportions since the first of the month. New building contracts awarded in New England this month fall several hundred thousand dollars under those for the same month last year. In addition to this several contracts practically awarded are held up for one reason or another. Reports from several leading New England centers show that banks have not been willing to loan money on building propositions at rates borrowers could afford to pay. This is the chief reason why more new work has not been started.

Dealers in cement have found the volume of new business below the average expected at this season. While business is not active, dealers do not appear anxious to increase their business at the sacrifice of profits. Portland cement is firmly held at \$1.40 in cotton, f. o. b. the works. From this price buyers are entitled to a rebate of 7½ cents on each bag, provided it is returned in good condition. The call for lime is moderate. Prices for No. 1 stock range from 90 cents to \$1.00. A fair demand for bricks is reported with prices steady.

The Norwood Cement Stone Company has been incorporated with a capital stock of \$5,000. The incorporators are George E. Sanborn, L. Herman Braver, Jason L. Daniels and Harry E. Sanborn.

The Haverhill Cement Stone Company has been incorporated with a capital stock of \$15,000. The incorporators are William W. Ham, Eli Tibodo, Louis H. Miner and Frank E. Noyes.

The New Bedford Pressed Stone Company has been organized with a capital stock of \$25,000. The incorporators are Wilfred Smethurst and Wilfred H. Smethurst.

The Berkshire Construction Company has been incorporated with a capital stock of \$10,000. The incorporators are William A. Waterhouse, Joseph A. Lyons and Harold P. Waterhouse.

Work on the foundations of two one-story reinforced concrete mills has been started at North Bennington, Vt. The buildings will be 56x140 feet. The contractors are the Aberthaw Construction Company, Boston.

F. C. Alexander, Boston, has a contract calling for the erection of a one-story concrete, brick and steel engine room to be built in Wakefield, Mass., for the Heywood Brothers & Wakefield Company.

A concrete coal pocket 52x35 feet is to be erected in Wakefield, Mass., for the Harvard Knitting Mills. The contractor is A. A. Butler, Wakefield, Mass.

A power house, one story high, 35x107 feet, is to be erected in South Framingham, Mass., for the R. H. Long Shoe Company. The engineer is C. H. Eastman, Boston, and the architects, Ripley & Russell, also of Boston. It is estimated the building will cost \$20,000.

The Ambursen Hydraulic Construction Company, Boston, has a contract for building a concrete dam at Ellsworth, Me. A concrete power house will also be erected. This building will be 64x150 feet.

One of the most important contracts awarded in Boston calls for a one-story granite building 60 feet high, 180x90 feet. This will be erected in the business section of the city and when completed will be occupied by the First National Bank. The engineers are L. P. Soule & Son Company, Boston, and the architects, Sturgis & Barton, Boston. It is estimated that the building will cost about \$600,000.

The Aberthaw Construction Company, Boston, has a contract calling for the erection of a reinforced concrete coal pocket and boiler house, 100x25 feet, at Lowell, Mass., for the Hamilton Manufacturing Company. A one-story brick building will also be erected. The estimated cost is \$150,000.

The Eastern Expanded Metal Company, Boston, is supervising engineer on the reinforced concrete mill to be erected at Contoocook, N. H. The building will be 25x100 feet.

An eight-story reinforced concrete building will be erected in Springfield, Mass., for the Phelps Publishing Company. The building will be 105x300 feet at an estimated cost of \$350,000. Fred S. Hines is the engineer.

Work has been started on the foundation of a reinforced concrete factory, 120x90 feet, by the Viscol Company, East Cambridge, Mass. It is estimated that the building will cost about \$50,000.

A two-story granite building, 208x140 feet, will be erected in Salem, Mass., by the Essex county registry of deeds, at an estimated cost of \$325,000. The contractors are Woodbury & Leighton Company, Boston, and the architect is C. H. Blackball.

C. H. Cutting & Co., Worcester, Mass., are the contractors for a two-story reinforced factory building, 66x90 feet. The engineer is Adolph Suck.

THE TWIN CITIES.

MINNEAPOLIS, MINN., July 13.—The building season of the Northwest seems to be holding up reasonably well in totals, although in some respects and some materials there is a distinctly less volume of trade than formerly. The brick business, for instance, has suffered a decline, there being little demand, and a plethora of supplies. There was a rush to get brick burned because the lateness of the season starting made it seem likely that there would be a mighty rush for brick when finally the season got under way. But the bulk of the building done so far has been of the character which does not require a great deal of brick, and the result has been that there has been more brick than calls.

Other lines continue along the same lines as formerly. Cement is in good demand, with prices ranging about as formerly, and no such scarcity existing this summer as was the case a year ago at this time.

The Red Wing Sewer Pipe Company of Red Wing, Minn., will double the capacity of factory A, resulting in a fifty per cent increase of the plant. The capital stock has been increased to \$1,000,000.

The Keith Company, architects, of Minneapolis, is starting work for a new office building at the foot of Lowry Hill, to be of cement plaster construction. This company built the Plaza hotel of cement construction, and has done considerable cement building.

The Minnesota Cement Brick Company has recently amended its articles of incorporation, making the principal place of business Minneapolis.

The Wisconsin Brick and Lumber Company of Minneapolis has recently been incorporated, with \$100,000 capital stock. The incorporators include John Boes, Peter Steffens, Adam Gilles, Frank C. Frost and others.

Minneapolis showed a handsome gain in permits for June and also for the six months of the year. June permits amounted to \$1,001,985, against \$686,915 for the same month of last year. The aggregate of permits for six months of 1907 is \$5,060,305 and for 1906 \$4,153,550.

Permits for St. Paul for June show a falling away, the amount being \$562,792, against \$800,661 for a year ago.

J. & W. A. Elliott, general contractors, have incorporated their business as the J. & W. A. Elliott Company, with capital stock of \$100,000. The incorporators are John and William A. Elliott and Orin P. Bailey, all of whom have been associated with the business for some time past.

The Western Granite Company, with yards at Sauk Rapids, Minn., will furnish the Northern Pacific railway with 135 cars of stone for the work in progress by the road at and near Stockwood, Minn.

A brick stack which has been standing for years at the site of the old Nelson sawmill at Fourth avenue northeast, in Minneapolis, was removed by the use of dynamite recently. The site is to be used for a new building, and the time and cost of taking the stack down in the usual manner made it undesirable. So, with police consent, it was arranged to blow it down. It was done successfully early Sunday morning.

FLOUR CITY BUILDING.

James Leek received the general contract for extensive remodeling of the building at 120-130 South Third street, for the Conklin & Zonne Company, agents. The work amounts to rebuilding, and will cost \$20,000. Mark Fitzpatrick of St. Paul is the architect.

The Flour City Ornamental Iron Works, whose plant at Twenty-seventh avenue south and Twenty-seventh street was damaged by fire, has had plans prepared by Kees & Colburn, architects, for a fire-proof building, 75x200, to be erected at the plant.

R. T. Giles has had plans prepared by Jager & Stravs, architects, for a reinforced concrete residence to be erected on Vincent avenue south, near Forty-first street. It will be cement plaster veneered, 30x60 feet, on boulder foundation.

William M. Kenyon, architect, has completed plans for a building for the Northern Normal and Industrial School at Aberdeen, S. D. It will be three stories and basement, 62x112 feet, of hard burned paving brick, reinforced concrete construction. Cost, \$50,000.

SAINTLY CITY BUILDING.

James Alan Macleod, architect, St. Paul, has awarded the contract for his modern residence on Summit avenue near Arundel to the St. Paul Building Company. The house will be of pressed brick, stone and reinforced concrete, 50x51 feet in size, modern throughout. Cost, \$12,500.

Thori, Alban & Fisher, architects, have plans for a four-room school building for Revillo, S. D., to cost \$10,000. It will be two stories, 36x66 feet, of brick or cement blocks.

PITTSBURG AND VICINITY.

PITTSBURG, July 11.—The cement and concrete business has taken a tremendous spurt with the good weather of the past three or four weeks, and at the present time there is more of it being done in Pittsburg and vicinity than ever before. While this class of work was seriously held back for some time on account of the exceptionally unseasonable weather, it was not at a standstill by any means, as there were a number of large projects, such as the new Hostetter building, the Jones & Laughlin Steel Co.'s new plant, and others that were pushed forward regardless of the weather on account of the great importance of the work. But paving, curbing and similar work was practically at a standstill.

The cement market here is very good, and there is excellent demand. Local offices of the large cement companies report that they are all receiving their share of the business from this territory, and the same report is received from the local cement, sand and gravel dealers.

A contract that calls for the use of a large amount of cement has been awarded to John R. Bennett & Co., of Uniontown, Pa., and calls for the construction of a 10,000,000 gallon reservoir above the Monongahela river, near Brownsville, Pa. The company constructing this reservoir is the General Water Company, a concern composed of Pittsburg, Uniontown and Connellsville capitalists. It will supply the water for a number of the large coal and coke operations in that neighborhood.

The contract for supplying the large amount of cement that will be used in the construction of the new glass works that will be built this summer at New Martinsville, W. Va., has been awarded to the New Martinsville Supply Company, of that place. The contract will be executed by William Francis and A. Burkhart, New Martinsville contractors.

The contract for constructing the large concrete wall that will line the banks of the river through Conneautville, Pa., has been awarded to Charles T. Faber, of that city. No reinforcement will be used.

The county commissioners of Cambria county, headquarters at Ebensburg, Pa., have decided to erect two more reinforced concrete bridges over streams in that county during the present summer. The first will be constructed over the Susquehanna river in Barr township, between Spangler and Nicktown, and the other will be over the Conemaugh, between Salix and Wilmore. Each of the new bridges will have a single span 36 feet long, and the bridges will be 16 feet in width. There have been several similar bridges built in the county, and they have been proving very satisfactory, hence the decision to erect others.

The announcement was made last month that the Pennsylvania Rubber Company, of Pittsburg, would erect a large reinforced concrete addition to their plant, which is located a short distance east of this city. The company is having plans prepared, and work will be started next month.

E. J. Barney, of Dayton, O., has been awarded the contract for erecting a large six-story reinforced concrete warehouse that will be built in that city this summer for George E. Mason, of Cincinnati, Ohio. The building was designed by Schenck & Williams, of Dayton, and work on the erection will be started at once in order that it may be ready for occupancy early during the coming winter.

George E. Devitt, of Franklin, Pa., has awarded the contract for the erection of a two-story cement block stable and automobile garage in that city to Wallis & Carley, of Franklin. This stable will be built in the rear of the handsome block residence that the same contractors are now building for Mr. Devitt. The blocks are being made at the local plant which the contractors operate in that city.

Haupt Bros., of Altoona, Pa., have been awarded the contract for the construction of the first cement block building projected for Bellefonte, Pa., a short distance from Altoona. The building will be a parish hall for the Bellefonte Episcopal Church, and will be two stories in height. The contractors have a large amount of cement block building on hand, and their cement block plant is running to capacity.

A new firm of cement and concrete contractors has started in business at East Brady, Pa., under the name of Klugh & Blatt, and has already been awarded a number of large contracts for foundations, retaining walls, etc. The firm will also handle a line of cement and lime.

The Superior Steel Company, of Carnegie, a suburb of Pittsburg, Pa., will erect a \$1,000,000 addition to the plant at Carnegie, plans for which are now being prepared by the well known local engineer, Victor Bentner, Westinghouse building, Pittsburg. All of

the foundations for both the plant and the heavy machinery that will be installed will be of concrete, and the contract for this part of the work will be one of the largest of the kind that has been started in this vicinity this year. The engineer will be ready for bids after September 1 next.

The contract for the erection of a large reinforced concrete saw-mill that is to be erected near Sheffield, Warren county, Pennsylvania, has been awarded to the Nicola Building Company, Farmers' Bank building, Pittsburg. This mill will cost \$50,000 exclusive of the equipment, and will be the first instance in which a building of this kind has been constructed of concrete in this state, and so far as is known locally, the first in the United States. The mill is being erected in the center of a dense timber section, which is visited frequently by disastrous forest fires, which have destroyed a number of valuable mills, and resulted in severe loss. On this account, the insurance rates are almost prohibitive, and it is the claim of the owners that the saving in insurance rates through having such a fireproof building will more than pay for the cost of erecting it.

Another contract for the construction of a reinforced concrete building in the Pittsburg district has been awarded to the Nicola Building Company. This building will be located at Beaver Falls, Pa., and will be the new plant of the Armstrong Cork Company, which, on account of insufficient room for expansion, is moving away from Pittsburg, where the plant is now located.

The New Castle Concrete Company has been organized and incorporated at New Castle, Pa., and will carry on a general contracting business in concrete and allied lines throughout the western part of the state. The new company has also extensive sand and gravel holdings, which will be operated in connection with the contracting business, and later the firm will manufacture a large line of cement building blocks. John M. Gardner, R. G. Allen, Andrew Deitterle, Lysle G. Emery and L. A. Johnston are the incorporators of the new concern.

Seamon & Carothers, of Greensburg, Pa., have been awarded the contract for the construction of a reinforced concrete bridge that will be built this summer in Westmoreland county, near Bolivar, Pa. The proposed bridge will be 65 feet in length and 18 feet wide. It will have a single span, and will be one of the longest highway bridges in this part of the state. It is being built by the county.

One of the first instances in this part of the state where concrete is being used in the construction of an important building in cemetery work will be the large concrete and hollow tile receiving vault that will be built this summer at Brookville, Pa., for the Brookville Cemetery Company, the contract for which will be awarded the latter part of this month.

James B. Willets, of the cement working firm of Willets & Son, of Williamsport, Pa., has discovered a process whereby he claims that it is possible to give concrete a polish that is as smooth and attractive as the finest marble.

Plans have been prepared for the erection of another large reinforced concrete apartment house, which will be built this summer at the corner of Elmer and South Negley avenues, Pittsburg, by John McSorley, 6024 Penn avenue, this city. The proposed structure will be four stories in height, 43 by 167 feet, and will cost approximately \$75,000. The plans were prepared by Chicago engineers, but all contracts will be awarded here by the owner, who looks after all of his own building. This is not the first similar building that he has erected, several others having been built within the past few years, and sold a short time after their completion by Mr. McSorley, who builds for investment.

Charles Schmutz has been appointed general sales agent for Pennsylvania, Ohio and Indiana for the Superior Portland Cement Company, of Charleston, W. Va. He will have permanent headquarters at Youngstown, Ohio, from which point he will conduct all business throughout this territory. He was formerly general sales agent for the cement department of the Brier Hill Coal & Iron Company, of Youngstown, and is well known among the users of cement.

The contract for the erection of a two-story cement block residence at Greenville, Pa., has been awarded to Beil & De Arment, of that city. The residence will be 42 by 44 feet, and will be one of the finest residences in that city. It is to be ready for occupancy this fall.

A new plant for the manufacture of cement building blocks has been started in operation at Ligonier, Pa., by Reed Fry, of that place. While the plant is small, it is a model one in every respect, and has a capacity of several hundred pieces a day, which will be sufficient to supply the demand from that locality for some time to come. He has already been awarded the contracts for furnishing the blocks that will be used in the construction of the first two cement block residences that have ever been built in that vicinity, and is now delivering on both contracts.

CLEVELAND AND NORTHERN OHIO.

CLEVELAND, O., July 15.—Conditions here continue to improve, for with the brightening of the weather during the past few weeks building has gone ahead with leaps and bounds. Records for the month of June were smashed in the office of the city building department and in almost every office handling building material for sale.

On the morning of July 4 several hundred members of the Cleveland Builders' Exchange left on the steamer North Land for Mackinac on the annual outing of that body. From Cleveland the party went to Detroit, thence up through Lake St. Clair to the flats and on to Mackinac. A side trip was made Saturday to Les Cheneaux islands, and a social party held that evening. The party returned the following Monday evening. H. C. Bradley, of the firm of Barkwell & Bradley, the well known brick concern of Cleveland, is president of the exchange, and with the aid of Mrs. Bradley chaperoned the party.

The annual summer outing of the Ohio Builders' Supply Dealers' Association will be held at Cedar Point on August 16 and 17, when the semi-annual meeting will be held. W. A. Fay, of the Masons' Supply Company, of Cleveland, who is president of the body, will head the Cleveland delegation of about 100 members, who will attend the gathering. It is expected that a fine time will be had, as an elaborate program has been arranged.

At the office of the Masons' Supply Company it is reported that business is very brisk. The concern is furnishing in the neighborhood of 5,000 barrels of cement for the construction work in connection with the new grocery warehouse of the Elldridge Higgins Company, on Ontario street, at Vinegar Hill. The demand for pressed brick is also said to be very active.

The Carey Construction Company, one of the leading concrete building concerns in Ohio, is busy on several jobs, contracts for which have been closed during the past month. The company is building a five-story fireproof hotel for R. C. Morton, on Euclid avenue just east of Brownell street. The building will have a frontage of 40 feet, and will be about 120 feet deep and five stories high. The floors and stairs will be of concrete in addition to the main structure, which will be veneered with brick.

Work is proceeding very satisfactorily with the concrete dock for the Cleveland Furnace Company, which is in a class by itself. Some forty feet has been laid and will be tested shortly. The Carey Company is building it, using the slag furnished by the furnace company in the concrete mixture.

J. D. Carey has finished the installation of 50,000 square feet of concrete flooring in the new building erected for the Ohio Ceramic Engineering Company in West Cleveland, which was burned a few weeks ago. The main structure was also erected of concrete by the Carey Construction Company. The engineering company is hard at work trying to catch up with its back orders.

Another job being taken care of by J. D. Carey is the laying of 30,000 square feet of cement walks for the Empire Realty Company, which is also having 6,000 feet of curb laid on a new allotment off East 105th street. Mr. Carey is putting in a culvert for the Issell & Lynn Company, on the new Schumway allotment on St. Clair avenue, which will have a span of twenty feet and be forty feet wide.

The Carey Construction Company, in conjunction with the Jackson Filter Manufacturing Company, of St. Louis, Mo., was the lowest bidder on a new filter plant for the town of Sandusky Ohio, underbidding five other competitors. The plant will be a big one, having a storage capacity of 1,000,000 gallons of water. The appropriation for the filter plant is \$75,000.

One of the most unique concrete jobs in Cleveland is to be seen at the new west side Majestic theater, where the boxes and balcony of the new playhouse are all built of reinforced concrete. Vast quantities of cement have been used in the structure which is entirely fireproof and a model of its kind.

Railroads entering Cleveland are preparing to use great quantities of concrete in the elimination of grade crossings. The Pennsylvania, Nickel Plate and other railroads have all signified that they are willing to spend millions in order to place their roads in good condition. On the Nickel Plate alone the work will cost \$3,000,000, while the plans of the Pennsylvania road are even more elaborate.

Work will be started within a short time on a new eight-story building for the White Automobile Company, on St. Clair avenue, in conjunction with the big plant already there. The structure will be of concrete construction, with pressed brick facings. Some 300,000 pressed brick will be required. They will be furnished by the Cleveland Masons' Supply Company. Yellow pressed brick and terra cotta will be used.

County Engineer Lea says that one in every ten bridges in Cuyahoga county is unsafe. When it is remembered that the county has several thousand bridges from a mile in length down to mere culverts this means that a great deal of construction work is in sight. The county authorities have ordained that henceforth all bridges are to be of solid concrete construction. Repairs and renewals this year will cost \$178,000, which sum is exclusive of the \$180,000 which will be spent for a new mammoth concrete bridge over Rocky river, west of Cleveland. The former sum will be spent on structures costing \$15,000 or less to repair.

The roof of the new federal building is being put on by the contractors at present. It is of concrete and quite massive, but the granite walls of the building are sufficiently stout to stand a much greater weight. There is only one other all concrete roof in Cleveland. It was recently placed on the new Hippodrome theater.

The cement market in Cleveland is quite firm, cement in cloth sacks selling at from \$1.85 per barrel to \$1.90, and 25 cents cheaper for the paper sacks. The demand is very heavy just now because of the backwardness of building earlier in the season. The supply, however, is said to be quite liberal, and Cleveland stands in no danger of a cement famine for a while yet. Slag cement continues to move quite freely and the various furnaces about Cleveland producing the slag product find that they have all the business they can care for.

The George Rackle & Son Company, manufacturers of various kinds of art stone, report an exceedingly active season. The ornamentalations for a handsome new terrace for J. D. Cuddell, being erected at Detroit avenue and the west boulevard, are being supplied by the Rackle company at a cost of over \$4,000. The same company is supplying the art stone for the new St. Joseph's Charity hospital, at Lorain, Ohio, at a cost of \$3,500. Big panels, twenty-five and thirty-five feet in size, containing figure work, are being used. Grecian columns and capitals for the Penfield Avenue bank at Lorain are also being furnished by the Rackle company. A \$15,000 art stone contract for the First Methodist church at McPherson, Kan., is also being filled at this time.

Cleveland undertakers have formed an association for the promotion of the use of cement burial cases, known as the Egyptian Vault Company of Cleveland, and have entered into a contract with George Rackle & Son for the supply of cases which retail at about \$40.

The National Concrete Fireproofing Company's Cleveland office reports an active season. The National Company is putting in \$70,000 worth of concrete floors and partitions in the new Hotel Patton at Chattanooga, Tenn. The same company is covering the fireproofing contract on the North Side High School at Syracuse, N. Y., which will return a check for \$28,000. Two all-concrete buildings costing \$12,000 are being built in Cleveland for the National Carbon Company, while the fireproofing and concrete work on the new St. Luke's Hospital on Carnegie avenue, Cleveland, will bring \$10,000. A large number of other jobs are also under way.

At the plant of the Cleveland Asbestos Plaster Company at 1212 East Fifty-fifth street it is stated that the company is having a busy season. Prices hold well for plaster here, different grades retailing from \$5 to \$8 per ton. Among the recent jobs finished up by this company are the new ten-story Gillsey Hotel on East Ninth street, Cleveland, and the new ten-story addition to the Hollenden Hotel, Cleveland, as well as a great many of the big apartment houses in this city.

There is an increasing demand for cement blocks, according to the report of the manager of the Lakewood Cement Block Company, which has its plant located at No. 3 Quail street, Lakewood. The capacity of the plant has been increased during the past month by the addition of another block machine from Jackson, Mich.

One of the biggest concerns in Cleveland which is erecting concrete structures is the Reinforced Concrete Construction Company, with offices at 1025 Oregon avenue. The company is busy erecting a second concrete building for the B. F. Goodrich Rubber Company, of Akron, Ohio. The structure is six stories high and 100 by 150 feet in size. It will cost about \$50,000. This building is slightly larger in area than the one finished by the same builders a short time ago. The Reinforced Concrete Company has a big contract with the Washington, Baltimore & Annapolis Electric Railway Company to erect a car shop and repair depot at Academy Junction, near Baltimore, at a cost of \$80,000. The building will be only one-story high, but will be spread over several acres of ground. It will be fireproof and modern in every respect. The company also has a number of other less important jobs on hand.

An interesting work is being done by the Standard Contracting Company, of Cleveland, in the building of a concrete dock for the Pennsylvania Railroad Com-

pany, on the latter's property on the harbor front just east of the United States government pier. The dock, when completed, will be 300 feet long. It is of solid concrete construction and built after a new model. Piles are first driven and among and over these is placed the rip-rap. The forms are then set three feet under water and a nearly dry mixture of concrete is dropped into the forms, thus pressing the surplus water out. The face of the dock exposed to the water is eight feet high, three feet being under water. The dock has a six foot top, which is terraced down step-like to the base, which is eighteen feet wide. It is believed that even if the sand should wash out from under the dock that the piling would keep it from collapsing. After the concrete work is finished the whole dock will be filled in solid with slag from one of the blast furnaces near Cleveland, thus making a most substantial affair of it.

SYRACUSE, N. Y.

SYRACUSE, N. Y., July 15.—There seems to be no let-up in building and construction work and the dealers and contractors are satisfied with the season thus far. Building permits for the first six months of the year in Syracuse amount to \$2,148,753, as compared with last year's figures of \$1,480,155.

Cement is selling for \$1.60 to \$1.80 in carload lots at the mill.

The Syracuse Rapid Transit Railway Company is trying an experiment which if successful will result in a large quantity of concrete work. In the construction of the South Salina street line, steel ties with concrete bedding are being used for the first time in Syracuse. The concrete bed extends over six inches under the ties and two inches above the top.

Close to 100 miles of cement walks will be laid in Syracuse this year. Stakes have been driven by engineering forces for about 150 sidewalks and contracts for all of them will be awarded within six weeks. These walks will be cement and will cost the property owners between 12 and 13 cents a square foot, the price varying according to the amount of excavating required.

George W. Pack, senior member of the firm of George W. Pack & Sons, dealers in cement, water lime and owners of the Adamant plaster factory, was struck by a New York Central freight train recently and for a week lingered between life and death. He was thrown from his carriage and picked up unconscious. He had several ribs broken and was badly bruised about the face and head. During his illness, the business is being run by his son, the junior member of the firm.

There is quite a demand among builders for plaster board and many loads of it may be seen on the streets.

Hill & Van Wagner are having a large demand for cement blocks, which they are turning out at the corner of Canal street and Crouse avenue. They are using the Century machine and manufacture by the wet process. This firm has been doing a large quantity of concrete foundation work, using sand, gravel and cement, and sand, broken stone and cement.

Dawson Bros. are using more concrete than is customary in the Y. M. C. A. building, according to the plans drawn by Gaggin & Gaggin. The same firm also have the contract for the new Herald building, which has just been started and which will also contain a large quantity of concrete work.

The Empire Portland Cement Company at Warren has recently increased its capital stock, bought additional land and will greatly increase its output.

The Onondaga Pressed Stone Block Company are running their plant at full capacity and are doing the best business of any season since the company was formed. Among the buildings they are now working on are a school in Dewitt, a Jewish synagogue at the corner of Monroe and State streets.

All of the employers of labor report that labor is higher than it has been in years. Common laborers are demanding \$2 to \$2.25 a day.

The National Wall Plaster Company, of which Harvey E. Dingley is general manager, has had a good season and Mr. Dingley predicts that these conditions will continue for the last half of the year. Prices of plaster hardened up early in the season on account of increased cost of labor. The company's quarries near Manlius are running with the usual number of employees.

John L. King, president of the Split Rock Cable Road Company, recently died at his home in Syracuse. Mr. King has been connected with the company since its inception. The company operates immense quarries at Split Rock and transports the crushed stone to the Solvay Process Company's plant, which manufactures soda ash and many other products. Mr. King was also vice president of the New York Brick and Paving Company for many years and was identified with a large number of other industries.

BUFFALO, N. Y.

BUFFALO, N. Y., July 16.—The Grade Crossings Commissioners of Buffalo believe that reinforced concrete is the proper material to be used in the grade crossing work to be done on an extensive scale in this city. The members have therefore recommended its use to the common council of this city. That body will determine the class of construction. Several bids were recently opened by the commissioners for the important work of eliminating New York Central grade crossings in East and North Buffalo. The commissioners said the use of reinforced concrete under the bids as opened would result in a saving of \$3,500 in the cost of the work. The commissioners also voted to recommend to the common council the issuance of \$200,000 worth of grade crossing bonds to pay for the city's share of the work. The commissioners also advised the Buffalo aldermen that John Johnson was the lowest bidder for reinforced concrete work, and recommended that that material should be used in the various contracts in question. The bids recently opened referred to the approach work in connection with the construction of various viaducts. The city pays 35 per cent and the railroads 65 per cent.

The Unity Portland Cement Company of Buffalo was recently incorporated with a capital of \$75,000. The directors are F. F. Emerson, F. J. Glass and A. B. Weaver of this city.

The aldermanic street committee has voted in favor of repaving High street its entire length. Bids were received weeks ago, but have been held up by the filing of a remonstrance.

The deputy superintendent of public works of New York state has announced that the 1,000-ton barge canal in this state will not be completed in the year 1911, nor for many years thereafter. The announcement has caused some surprise in New York state. It was also said that not much more than \$2,000,000 has been spent on the canal work in four years. The entire work, according to present figures, will cost about \$101,000,000.

The concrete work surrounding the McKinley monument in this city is practically completed. The contract was in charge of the American Concrete Company, of which Samuel Sapienza is proprietor and manager.

The Schenectady Contracting Company has secured the contract for the paving and curbing of Broadway in Schenectady, N. Y. The amount of the contract is \$95,724.35. Bids were also submitted by the Union Paving Company and Beckwith Bros., but both were slightly over the \$100,000 mark. The prices quoted on paving material by the successful bidders were: Asphalt, per square yard, \$2; brick, \$2.35; granite block, \$2.50. Curbing was quoted at 88 cents a lineal foot; excavation at 85 cents a cubic yard, and filling at 70 cents a cubic yard.

The concrete wall being built in connection with the new reservoir at Cobb's Hill, Rochester, N. Y., is attracting much attention. The wall is to be 3,600 feet in length. It is to be 21 feet in height and 10 feet 9 inches in diameter at the base. About 50,000 cubic feet of concrete is to be laid and 790,000 square feet of tarred waterproofing will be used.

The Ingle Machine Company is building a machine shop at St. Paul and Cataract streets in Rochester. The building is of reinforced concrete and when constructed will be 75 feet wide, 230 feet long and 41 feet high. Its estimated cost is \$30,500.

Repairs on the abutments for the new bridge over Murder creek in Akron, N. Y., have been completed. The new bridge will have a concrete roadway.

About 10,000 feet of new cement walk will be laid in Fulton, N. Y., this year. The department of public works of that village will spend about \$2,500 on the work.

According to present plans a dam will be constructed across the Susquehanna river by the village of Owego, N. Y. From each shore it is proposed to build solid concrete one-third of the way across the stream to a height of 2½ feet above low-water mark. The middle third is to consist of a row of concrete piers 20 feet apart. About \$7,000 will be spent on the contract.

The story of the "human brick," which has been going the rounds, is still being discussed in Buffalo. The first "human brick" lies buried in the Hand-in-Hand cemetery at West Roxbury, Mass. Five parts of cement and one part ashes compose the brick. The ashes are the remains of Herman Unger, who committed suicide in Boston. Unger's name is pressed into the face of the brick. He left a will in which he directed that his corpse be cremated and that his ashes be mixed with sufficient cement to form a solid rock. This request was carried out, the brick being moulded in a small square box. It is said that he believed that the human body after

death would be revived in the form of a flowering growth. He desired some disposition of his body which would preclude any such resurrection.

Robert A. Wallace of Buffalo has prepared plans for structures which will be built in connection with the extension of the waterworks system of this city. The buildings include a large, long structure to be used as a pumping station, at the foot of Porter avenue. The building is to be of brick, with stone trimmings.

The International Railway Company is building a mammoth power house in East Buffalo under the supervision of Thomas Pumfrey, the company's engineer. The house will be provided with offices, trainmen's rooms, heating plant, and other facilities.

Henry P. Burgard of Buffalo has received \$6,000 as compensation for the cancellation of his contract to build considerable amount of good roads in Erie county, New York.

The village board of Mt. Morris, N. Y., has appointed a committee to secure estimates for macadamizing Murray and Chapel streets, from Main to Eagle street, in that village. It is intended to have the work completed by the last of August. The board also authorizes the building of additional cement walks.

The Dunkirk, N. Y., lodge of Elks is trying to buy a site on Central avenue in that city. If they buy the property they will erect a new block on the site.

Mayor Rose of Geneva, N. Y., has appointed a committee which will pass upon the plans for the new city hall in that place.

It is said that a \$20,000 garbage reduction plant will probably be built in Hornell, N. Y., by the Bennett Incinerating Company of Elmira, N. Y.

Plans are being considered by the board of councilmen in Toronto, Ont., with a view to reclaiming the esplanade in that city. One of the plans involves the construction of a viaduct. The whole work, it is estimated, to be carried out for less than \$2,500,000.

It is said that Joseph M. Huston, the architect, who planned the \$13,000,000 capitol of Harrisburg, Pa., is spending the summer on the shore of Upper Saranac lake, 10 miles from Tupper lake, N. Y.

LOUISVILLE, KY.

LOUISVILLE, KY., July 15.—Labor troubles, more or less serious, are having their effect on building operations here, and it is natural to suppose that the concrete industry would be affected also. Still there is not so much complaint among the concrete operators as among the other trades, and this is giving the concrete men an opportunity to make some headway. It is satisfactory to note that Louisville was in the lead in building operations during June, despite the drawbacks, and of course concrete came in for its share of the business done.

In this respect it might be well to mention that outside of the city limits there is considerable concrete work being done of which no record is made, and there are a number of block houses being erected that would surprise one. Sidewalk work is also very largely on the increase in this city, and many of the operators have all they can do in this line. The brick pavement is now a thing of the past here, and its disappearance will be looked upon with a great deal of satisfaction, because of the short time it wears and its other disagreeable features.

In other lines there is a fair showing, though it is plain that the high cost of building materials and the labor troubles are having their effect on the situation. Many structures that were started some time ago have been held up, and this is having its effect on the sand, plaster, building supply and kindred industries.

The demand for lime, cement, sand, plaster, roofing and other materials is reported to be very good, though some of the dealers are complaining. During a severe storm here last week a large number of tin roofs were taken off, but in no instance was a gravel roof damaged, and the roofing men are feeling good over the situation, as well they might.

The National Concrete Construction Company find business very fair. They have some nice orders on hand, some of which are being delayed, however, on account of the labor troubles. They have just received a nice contract for a concrete pier to be erected at Latonia, Ky., for a bridge. They have considerable smaller work also, and with the exception of the delays above mentioned are very well satisfied with the situation.

The Central Concrete Construction Company are just as much rushed as the capacity of their plant will permit. They have a big contract at the custom

house. The government has decided that the driveway at the side of the building, which was of asphalt, was not of sufficient durability, and has ordered concrete instead. They have already started on this work. Another nice contract just awarded this company is that of a big apartment house to be erected with concrete blocks in the eastern part of the city. It will cost nearly \$60,000 and will be of a very attractive design. They also have considerable smaller work, and view the situation as one of good promise.

The Louisville Pressed Stone Company are preparing to erect a large concrete block plant for themselves at Fifth and A streets. It will be one story in height and 100x120 feet in size. The structure will cost about \$6,000. This company is erecting a number of concrete block houses, and report that the general outlook is of a very favorable nature.

The Fitch-Troxell Company have as much work as they can take care of in concrete work, much of which is outside of the city. They have enjoyed a good business all this year, and manage to always secure plenty of work so as to require the services of a large force of hands. They now have crews at work in several sections of the country.

The National Roofing and Supply Company have found the demand for concrete somewhat quiet, though they have had enough to keep them occupied. In the roofing industry they say that they have had a reasonable amount of work, though this is not considered a very active time of the year.

The Southern Roofing and Paving Company say that they have some nice orders for both concrete work and roofing. Considerable of their work is outside of the city, and it includes some work of a very big character. They are busier than they were a month ago, and believe that before the end of the year business will be in every respect satisfactory.

E. E. Peterson, a well-known concrete worker here, is busy on paving work, of which he makes a specialty.

Although the Oliver Company is making some progress on the big Belknap warehouse at First and Washington streets, they complain that the labor troubles have delayed operations somewhat. Still they hope to complete their part of the work in the required time.

J. B. Speed & Co. have as many orders as they can care for in cement. They are very well pleased with the demand, and only regret that their capacity is so limited that they can not take care of more business. The demand for lime has also held up very well.

The Western Cement Company have had a very good demand for natural cement during the past few months. Mr. Courtney is very proud of a test made at St. Louis, in which natural cement showed a greater tensile strength than did Portland for the period of one year.

The Utica Lime Company have found that their business has been effected by the labor troubles, and that while the demand for lime and cement has been fair, it could have been better, and they attribute it to the slackening in the building line. They believe that with the change in the situation they will have all the orders they can take care of.

W. F. Nugent & Bros. say that the demand for sand and gravel is very good with them. They have been enjoying a nice business for some time. They have never made any improvements in their plant, but they have purchased the equipment and will install it as soon as they can arrange matters to do so.

The Ohio River Sand Company have plenty of orders, though they say that they could take care of more. They have just completed some extensive improvements at their plant, and it is now one of the best of its kind in this section of the country. They have a modern steam hoist, and an incline that makes the handling of their output a thing of the greatest convenience. They can load four cars of sand or gravel at one time with their new arrangement.

The Kentucky Wall Plaster Company are about as busy as they wish to be, and that is saying that they have all the orders they can take care of by operating both of their plants to their capacity.

The Atlas Wall Plaster Company are getting things in shape so as to begin operations within a short time. They will have a daily capacity of from 400 to 700 sacks of hard plaster per day. They are installing some of J. H. Day's mixers and W. T. Pyne Mill Company's grinders. They will manufacture several kinds of plaster and have a most encouraging outlook for business.

S. A. Troxell & Co. have plenty of orders for roofing and are keeping a large force of hands engaged.

The Louisville Roofing and Supply Company have plenty of work on hand.

The Louisville Fire Brick Works say that while they are busy, the demand is not so brisk as it might be; still this is their dull season, and they are not surprised. They look for improvement in the near future.

MEMPHIS AND SOUTHWEST.

MEMPHIS, TENN., July 18.—The builders' supply trade shows a noticeable improvement here the last two weeks. That does not adequately describe the sixty days of dull times that were experienced in the spring. Construction of business houses, residences and some little municipal work now constitutes the city business. A picking up in out of town orders is noted by each of the firms visited by Rock Products' man today.

The railroads are again making inquiries and this is a further contributory feature resulting in the stimulation of business.

Steve Wright, of the Wright Lime and Cement Company, South Third street, was seen at his office today. Mr. Wright had just returned from Nashville, where he was called upon a sad mission, the funeral of his brother, John A. Wright, for the past fifteen years actively identified with the builders' supply trade of Nashville. John A. Wright, the deceased, was 47 years of age and a native of Canada. He was a genial and staunch friend, and his death will be a source of keen regret to a wide circle of friends North and South.

Edwin Fraser, of the Cubbins Lime and Cement Company, said today: "There are practically no changes in the supply market, but the demand is a good deal more brisk. We are putting out a great deal of Speed's cement, and during the last two weeks we might characterize our trade as very brisk. We are shipping quite a lot of this product to out of town markets also. In the plaster trade we have had quite a satisfactory summer business. We are pushing the Ivory Plaster of the United States Gypsum Company, of Chicago, and building up a large trade in it."

The Wright Lime and Cement Company reports a good improvement in July business over that of June.

Fred Cubbins, of the Cubbins Lime and Cement Company, is in Chicago and Waukegan, Ill., this week, and when he returns E. O. Cubbins will take his vacation.

The Cubbins Lime and Cement Company have been furnishing much of the material for Horn Bros.' flats.

The Roman and Venetian Mosaic Tile Company, 330 Poplar avenue, have just completed tiling contracts in the handsome Commercial Appeal building on North Second street. They have the contract to do the vestibule work in the Mercantile block on Main street.

The Fischer Lime and Cement Company on Adams street, while among the youngest supply firms here, have built up one of the best patronages in the entire Memphis territory. They furnished large bills of material on the Goodwyn Institute, the Business Men's Club, the Memphis Brewing and Malting Company's building, the College of Physicians and Surgeons and other large buildings erected during the first half of 1907. They carry the distributing agency of the Kosmos Portland cement, the Acme cement plaster, the Eagle cement plaster, Laclede fire brick and other well-known agencies.

J. A. Denie & Sons, the pioneer lime and builders' supply people here, said today to Rock Products' representative that an encouraging feature of the July business is a resumption of inquiries from the large railway lines with reference to material for their improvement work. These veterans in the trade, like other Memphis firms, had noted the depression during the early summer, which they attributed to the supposed poor crop prospects in the Delta and surrounding country.

The Memphis Stoneware Company lost its plant in South Memphis by fire on July 2. The plant was valued at \$30,000 and was insured for \$20,000. The factory was erected three years ago. Isaac Rees is president of the company. The plant will be rebuilt.

The Charles Yandell Company has been chartered at Memphis with a capital stock of \$10,000. Charles Yandell, J. C. Harris, W. S. Roberts and others are the incorporators. The company will do blasting, quarrying, make cuts, fills, etc., erect culverts, piers and abutments.

The Rives Tile Company, of Rives, Tenn., has been organized with a capital of \$10,000 by W. C. Farris, J. B. Candel, W. M. Fox and D. H. Woody.

The Union Sand Company will move its plant to South Memphis and abandon the wharf where it has been compelled to take shelter during every high water. C. D. M. Greer, the manager of this plant, states that the high waters have caused great annoyance to the plant heretofore. Now the company can get better railway facilities and will be able to put in an elevator, which will get the sand up to the level of the city without the steep haul which was necessary at the levee.

The Woodward Cement and Concrete Company has been organized at Woodward, O. T., with a capital of \$10,000. The incorporators are S. B. Laune, E. P. Burdick and A. Van Pelt.

NEW ORLEANS, LA.

NEW ORLEANS, LA., July 15.—Rapid progress is being made with the concrete work in the city. Basements of tall buildings, foundation piers and the reinforced concrete columns, concrete floors and roof work are all progressing and keeping a little in advance of the other workmen. All the large buildings under contract where the expenditures run from the hundreds of thousands to the millions have a good share of concrete work. Brick and stone buildings are substantial, but if you want a building to last and go down in history build of concrete. Look at the wonderful ruins in southern Europe and northern Africa—built so long ago that the history of their construction is dim, yet they stand a mute evidence for the lasting ability of concrete.

The work on the New Orleans Terminal Company's docks at Chalmet is progressing slowly. There has been considerable delay there owing to the high water during the spring and early summer, but in July the work was resumed and has been progressing favorably since. The shortage of labor has hindered some. It is hot work there in the sunshine and few like to work until the days are cooler.

Heat prostrations in open-air work is unheard-of here, but the men read of the hundreds that are overcome in New York and Chicago and grow very warm thinking about it. It will be in next year before the ship slip alone will be completed, to say nothing of the warehouses. The headquarters of Gen. Jackson during his engagement at New Orleans in 1814 has been demolished. A big steel warehouse is to be erected in its place. The company will erect two of these warehouses. One will be 1,300 feet long and the other 1,680 feet long by 150 feet wide. These will have concrete roof and concrete floors and concrete piers and foundation on top of the piling.

It is difficult to begin to tell of the concrete operations in this city. They are so many and appear in so many different forms that it is like being dropped into a wilderness of flowers and required to gather the prettiest.

The hollow block, possibly, is slower than any other form of concrete to gain a foothold, yet it is making headway. Some of the modern dwellings and churches are now in course of construction of the hollow blocks. The Second Methodist church at Burgundy and Lafayette streets was dedicated June 15. It is a handsome structure of hollow concrete blocks and was built at a cost of \$15,000, which includes the interior fixtures as well. The congregation is a small one and this church means a labor of love covering six years. The church was designed by M. B. Depass and built by W. A. Nyquist.

The First Christian church at Seventh and Camp streets is another of the handsome new church buildings that is being erected of concrete blocks. This will cost also, when completed, \$15,000.

The congregation of the First Baptist church is building a new church at St. Charles avenue and Delachaise street. The foundation and the walls for four or five feet are to be of concrete blocks and from this will rise a superstructure of brick and terra cotta.

Concrete foundations are considered quite the thing now and it matters not whether it is a big steel structure that shuts off the sky line or a humble one-story building with a tin roof, it has concrete foundations. It is considered some cheaper than brick and more easily put down.

The secretary of the board of public works has just issued his report of the work done in May. Among other things he says:

"At the pumping station the foundations for the station are about completed and the erection of the steel frame has been commenced. The great chimney is completed. Materials are on the ground, and the completion of the plant should be rapid. The excavation is about three-fourths completed for the filters, and about 400 cubic yards of concrete bottom and side walls have been placed."

This work, it will be remembered from a previous article, is largely of concrete. The work on the excavation for the clear water reservoirs has been completed and the masonry walls started. The settling basins are also well in hand and the excavation is being made for the walls. The piling is all in. It has been recommended that the board have the "I" beams in the covered and lined canals cemented. This work will cost approximately \$25,000.

More or less concrete is used in all the city work. The streets that are paved with asphalt have a sub-surface of concrete. Capt. Hardee, the city engineer, has been very much delayed in the work of repairing the streets with the municipal repair plant forces, because it has been impossible to get oyster shells. There does not appear to be any probability

of getting shells until fall, and all streets to be repaired with them must wait until that time. The Chatawa gravel people have promised to deliver 365 carloads of gravel at once.

The big twelve-story building that is going up for the Maison Blanche Company has a vast amount of concrete in its construction. James Stewart & Co. are the contractors and that firm has gained a reputation for thoroughness and solidity in their work.

The ground plan of the Maison Blanche extends 163 feet and 6 inches on Canal street; 208 feet on Dauphine street and 81 feet and 6 inches on Iberville street. In the concrete foundation of this building will be 4,000 cubic yards. The basement walls and the water tank in the basement are of reinforced concrete. The tank and basement walls are waterproofed with cement facing. The air and pipe ducts under the first floor are of concrete and contain 800 cubic yards. The concrete contains cement, Mississippi gravel and crushed limestone from the Birmingham, Ala., district. The floors are five and one-half inches thick, of cinder concrete, reinforced with expanded metal. There is cinder concrete strip filling on all floors. The floor and roof work alone have 100,000 square feet of reinforced concrete work.

THE WEST COAST.

SAN FRANCISCO, July 8.—A great deal has been accomplished during the past month in the way of construction of buildings in this city. The scarcity of money is due to the extra caution of the local banks in the matter of making loans for building purposes. As a result many millions of dollars' worth of buildings are temporarily held up awaiting better conditions in the labor line. As soon as the strikes which have caused nearly all of the trouble are ended the building situation will improve rapidly. Nearly everything has been settled except the carmen's strike on the local street cars. The car service has been resumed upon nearly all of the local and suburban car lines with non-union platform men, and more passengers are carried each week, although the trades unions have imposed fines of \$50 upon any member who patronizes a street car.

The building permits granted during June in San Francisco amounted to a total valuation of \$3,916,450, which was a good showing considering the labor troubles and condition of the money market. The total amount of the permits issued since the fire is \$73,500,000. Los Angeles building permits for June were valued at \$1,500,000; Oakland building permits, \$448,570; San Diego building permits, \$1,135,850. The first week in July showed quite an improvement in applications for permits for large buildings.

The general manager of the Standard Portland Cement Company and the Santa Cruz Portland Cement Company has issued a letter notifying their selling agent, the Western Building Material Company, of San Francisco, that cement prices are reduced. He concludes the communication as follows: "In the hope that manufacturers and producers of other kinds of material needed for construction will in like manner assist in the reconstruction of the city, you are authorized to announce to consumers and contractors of cement in the city of San Francisco that from and after June 25 the price for cement from the factories at Napa Junction and at Davenport will be \$1.75 per barrel in sacks at said factories, subject to the usual reduction of 20 cents per barrel for empty sacks returned to the factories in usable condition. This price will apply on all unfilled San Francisco contracts made by your company at higher prices for the year 1907. We are prepared to furnish at the rate of 6,000 barrels per day from factory at Davenport and 2,500 barrels per day from the factory at Napa Junction."

Prices of foreign cement are keeping up well, on account of lighter deliveries and fewer cargoes booked from Europe, owing to the uncertainty of building prospects. Arrivals of foreign cement in San Francisco during June were 61,000 barrels.

James D. Phelan applied for a permit for an eleven-story reinforced concrete building to be erected on the corner of O'Farrell and Market streets at a cost of \$1,500,000. The general construction contract amounting to \$717,000 has been taken by Mahony Bros. William Curlett is the architect of the building, which covers a large triangular-shaped site.

Foundations are being laid for an eight-story reinforced concrete building on the northwest corner of Kearny and Geary streets. The stores and offices will be rented out by Magee Bros. A short distance north of this structure an eight-story steel frame, reinforced concrete and buff brick store and office building has been completed by the Thompson-Star-

rett Company, which is also to erect the building last mentioned. The same company has just completed the seven-story walls of a reinforced concrete building of massive construction on the west line of Kearny street between Bush and Pine streets.

The American Pacific Company has finished five stories of the reinforced concrete exterior walls of the six-story steel frame building on the southeast corner of Kearny and Post streets. The same company is preparing the foundation for a large reinforced concrete building exactly opposite on the southwest corner of Kearny and Post streets.

The American Pacific Company has completed the nine-story reinforced concrete walls and the floors of the Pacific building, on the southwest corner of Fourth and Market streets. This is one of the largest reinforced concrete office buildings in the United States and presents a very fine appearance.

A handsome four-story reinforced concrete store and office building has been completed as to the walls, on the northeast corner of Third and Mission streets.

A large reinforced concrete building is being erected on the site of the old Columbia Theater. The forms are in place for the first story.

The basement of the eight-story reinforced concrete Westbank building is finished and the extra heavy steel reinforcing rods are in position for the first story. This fine structure occupies the Gore lot at the intersection of Market and Ellis streets. The American Pacific Company has the construction contract and is doing thorough work. The retaining walls and sidewalks surrounding the building have been constructed of reinforced concrete, also. The Hennebeck system of reinforcement is used throughout the building, which covers a triangular lot 159x129x93 feet.

The ten-story steel frame of the new Gunst building on the southwest corner of Third and Mission streets is finished and the reinforced concrete south wall is up. It will be a very handsome structure when completed.

The Richards-Neustadt Company, with offices at 287 Monadnock building, has finished the first story of the Denman building. It will have two stories of reinforced concrete. Ransome bars are used in the construction work.

The new six-story Brandenstein building is being erected by the American-Hawaiian Construction Company on the large lot on the northeast corner of Mission and Spear streets. It is a reinforced concrete structure designed for great strength, as a store and warehouse for the tea and coffee trade of the M. J. Brandenstein Company. The basement and first floor are finished.

The first seven stories of the reinforced concrete walls of the new eight-story office building on the northwest corner of Pine and Battery streets have been completed and the interior finishing will soon be attended to.

On California street the reinforced concrete walls of the eight-story Santa Marina office building have been run up seven stories by the Woodruff Company. It occupies a large site on the northwest corner of California and Drumm streets. Double shifts of men are rushing the work to completion.

The reinforced concrete foundation has been completed for the new seven-story building on California street immediately adjoining on the west the new eight-story reinforced concrete Boyd building. The new structure will be of reinforced concrete and will contain a large number of offices, as well as several stores.

Proceeding west on California street, the first story of the three-story and basement Rosenberg building is seen rising on the northeast corner at the intersection of Front street. It is being built of large slabs of Roman stone, which is made in this city. It is of a light color and presents a pleasing appearance. It contains lime and sand.

The seven-story steel frame of the Andrew-Welch building is up at 220-222 California street and the reinforced concrete walls have been started. This will be a fine office building. The Thompson-Starrett Company has the construction contract.

The Land-Wharton Company has finished the second story walls of the large reinforced concrete building on the southeast corner of Sansome and Bush streets.

The Lindgren-Hicks Company has run up the reinforced concrete walls of the new Sheldon building on the southeast corner of Market and First streets to a height of four stories and is pushing the work to completion. It will contain stores and a number of fine offices.

The National Portland Cement Company has given a mortgage to the Union Trust Company of San Francisco, covering all of its property in San Benito and Monterey counties, to secure a bonded indebtedness of \$2,000,000, bearing interest at 6 per cent. The money realized from the sale of bonds will be used to erect a large cement mill.

CHICAGO

CHICAGO, July 18.—The first six months' building operations in Chicago show a decrease in comparison to the corresponding time last year. The fact that there were so many large buildings started in 1906 involving large investments brought the total expenditures for buildings up to over \$36,000,000, while this year it has been in the neighborhood of \$31,000,000. Taking into consideration the fact that the number of buildings which cost over \$500,000 were counted in figuring the large amount of money expended and the fact that there has been so few large structures proposed this year the comparison has been very favorable and may be considered normal. The large number of residences, flat buildings and small mercantile houses has exceeded that of former years, and while the demand for materials has not been up to expectations of the dealers up to this time all have been fairly busy.

Only one large building is now in course of construction, and that is the Corn Exchange Bank, at the corner of Adams and La Salle streets. The Everett Clark Company has the general contract for the building. The addition to St. Luke's Hospital is another fairly large job, requiring a large amount of building material. The plans for the new City Hall are still in the hands of the architects, Holabird & Roche, but will be given out soon.

Proposed Buildings Requiring Cement.

The Chicago Junction Railway Company have had plans prepared by Treat & Alschuler, Fisher building, for a large warehouse to be constructed at 1003 Thirty-fifth street. The building is to be 80x250 feet and is to cost \$50,000.

The Edward Katzinger Company, 163 Washington street, contemplate the erection of a five-story addition, 100x117 feet, to their present building, the cost to be about \$80,000.

C. H. Hengges, architect, with offices in the Chamber of Commerce, has prepared plans and is receiving bids for a reinforced concrete factory building. It is to be eight stories, 55 by 100 feet.

F. L. Barrett, architect for the Sanitary District of Chicago, with offices in the American Trust building, has drawn plans for a concrete warehouse to be erected on the drainage canal near Western avenue. The building is a one-story affair, 50x82 feet. J. J. Ryan will receive the bids of contractors.

Friedly & Voshart, metal manufacturers, 196 Mather street, will erect additions to two factory buildings. One is to be four stories, 25x50, and the other four stories, 49x100 feet. The principal form of construction will be reinforced concrete. The additions when complete will cost \$35,000.

Selz, Schwab & Co., boot and shoe manufacturers, will erect a factory at Kingsbury and Superior streets. It will be a four-story building, 95x103 feet, of reinforced concrete and will cost \$50,000. The architect in charge is Richard E. Schmidt. The general contract has been let to P. F. Mueller, 109 Randolph street. Architects Postle and Mahler have let the contract for the Illinois Leather Company factory at 400 North Halsted street to John Hammond & Co., 95 East Washington street. It is to be of concrete, three stories, 150x150 feet, and to cost \$50,000.

The Price Baking Powder Company, Douglas Park and Fillmore streets, will erect a one-story addition to their factory, 50x100 feet, of reinforced concrete. L. G. Hallberg, 84 La Salle street, is the architect, who prepared the plans and will receive the bids for the work.

Francis M. Barton, architect, 169 Jackson street, has prepared plans for a factory building. It is to be five stories, 80x210 feet, and of Barton's system of reinforced concrete. The cost will be about \$200,000.

The Corn Products Refining Company, of Waukegan, Ill., is having plans prepared for twenty reinforced concrete grain tanks in their factory. Each tank is to be 85 feet high and 20 feet in diameter, with a storage capacity of 25,000 bushels each. The total cost is to be about \$75,000.

The University Hospital, of which Dr. A. K. Steele has charge, will erect a building at Congress and

Lincoln streets. It is to be five stories high, 50x134 feet, and to cost \$150,000. Richard E. Schmidt is the architect preparing the plans.

The Chicago, Burlington & Quincy railway has been compelled, like the other roads entering Chicago, to elevate its tracks to the city limits from the Union depot. The engineers of the road in planning the work of elevation decided to experiment in different forms of construction, especially concrete—one of the important features of the work. The features of the work done in concrete is at street subways, where bridges are required. Instead of the subways being constructed entirely of structural steel or iron, concrete is being used to a great extent. The structural iron is used as a supporting or framework for the ceilings, which are concrete blocks. The iron piers are set on concrete foundations, at some places having a depth of fifty feet. The retaining wall is of concrete, having a thickness of about two feet at the top, tapering to the abutment in places to eight and ten feet. For subways the usual retaining wall is built up to the sidewalk. There are three rows of iron supports high enough to allow wagons to pass under. One row is outside of each sidewalk and one in the middle of the street. These supports are the entire width of the right of way or the length of the subway. The concrete in the retaining wall is poured on the job, but the concrete for the top or ceiling of the subway is in the form of immense concrete blocks. There are four spans or lengths of blocks across each subway. The outer blocks, having a width of about six feet, rest on the retaining wall on one side and the iron support on the other. The long blocks reach from this support to the one in the middle of the street, and each has a length of about thirty feet by three feet in height and three feet in thickness or width. The blocks are all made at a plant at Hawthorne, Ill., and are cast in wooden moulds. The blocks over the sidewalk weigh about seven tons each, while the outer blocks weigh about forty tons each. The blocks are reinforced by three quarter inch bars of steel running both length and sidewise through the blocks. After the blocks are cast and the moulds are taken off they are allowed to cure for about seven months before being used. After they are allowed to cure the usual time they are transported on flat cars to the place where they are to be used and are set in the walls by a derrick and cemented together with a cement mortar, the cracks being first calked with oakum. The face of each block is waterproofed with some preparation, several different kinds being experimented with, as well as special preparations being made by the engineers in charge of the work. This to find out what is the best waterproof compound. Above the concrete will be a bed of gravel in which will rest the ties for the track. This system of making the subways of concrete, the engineers claim, will be less noisome and the concrete in the end will outlast the iron or steel structure which has been used almost universally by the other roads in the track elevation in and about Chicago.

The J. W. Sefton Manufacturing Company has just moved into its new plant at Thirty-fifth and Iron street. The building is of reinforced concrete and considered one of the finest of its kind ever put up. It cost \$300,000.

The R. F. Conway Company is one of the progressive and up-to-date street contracting firm which lays miles of pavements in this city. In handling concrete for street work every means is facilitated for economical and rapid work. Instead of a large number of laborers to handle materials, machinery is used wherever practical. The materials are hauled to street intersections, where a large concrete mixer is stationed. After the concrete is mixed, which is done much better than by the old style hand way, it is dumped into industrial cars and hauled over industrial tracks to the place where it is wanted. The tracks are portable and easily moved, so that the concrete is quickly distributed. The Conway Company report that they find this system not only cheaper but a better quality of work can be turned out.

The Falkenau Construction Company is erecting a reinforced concrete building on Morgan street, near Thirty-fifth. It will be used for warehouse purposes. The Chicago & Northwestern railway is elevating its tracks three miles to complete the elevation to the city limits. The sand and gravel is furnished from pits owned by the company and the cement is being furnished by the Universal Portland Cement Company. All the concrete is being mixed by machinery, Smith mixers being used.

NASHVILLE AND THE SOUTHEAST.

NASHVILLE, TENN., July 19.—The market on lime, cement, sand and other supplies has been very active here in July.

Nashville is to have two concrete bridges over the Cumberland river, and contractors over the country have been paying a good deal of attention to this fact. The bridges are to have concrete abutments and concrete piers in the river. The contracts to be awarded on the bids will amount to \$400,000. W. J. Oliver of Knoxville will put in a bid, it is said. The following local firms also: Nashville Roofing and Paving Company, Foster & Creighton, and the Nashville Bridge Company. Other firms likely to be in the bidding are: The A. R. Stewart Company, who built the piers of the Illinois Central bridge across the Cumberland; Midland Bridge Company of Kansas City; National Concrete Company of Louisville; E. D. Hicks and Mason Hoge of Indianapolis; A. T. Calvert & Co. of Dayton, Ohio; S. R. Smith & Co. of Pittsburg; Southern Concrete Company of Ludlow, Ky. All of these concerns have been corresponding about the work.

The Newsom Crushed Stone and Quarry Company, First National Bank building, reports a very active midsummer business in all departments. One of their latest works in concrete is for automobile houses. They have completed within the last thirty days some elegant new residence jobs in concrete stone.

John A. Wright, for a number of years identified with the lime and supply business here, is dead. Mr. Wright was highly popular in trade circles. He was 47 years of age and a native of Canada.

The Perryville Gravel and Ballast Company of Perryville, Tenn., has been awarded a \$10,000 contract for graveling the streets of Huntingdon.

The West Construction Company of Chattanooga has just secured an important contract for street and sewer improvements at Lexington, N. C. The cost of the work will be \$80,000. E. G. Billingsley of the firm has gone there to make preliminary arrangements for beginning the work.

The Knoxville Roofing and Paving Company of Knoxville, Tenn., has the contract for the concrete curb work on a lot of city work there being done by the Southern Bitulithic Company.

Edwin Thatcher, concrete expert of New York, has been in the South for several days looking after the Galveston (Texas) causeway project and conferring with the county commissioners at Galveston.

The Alamo Cement Company of San Antonio, Tex., is enlarging its capacity, and when the plans for the improvements are carried out this will be one of the largest plants in Texas. Charles Bamberger and Fred Cook are among the largest holders in the company.

Purchase a Gravel Pit.

The city council of Faribault, Minn., authorized an appropriation to purchase a tract of land of 21 acres. Examination of the property develops the fact that it contains a bed of gravel of great depth. The purpose of the purchase is to furnish gravel for street and road purposes in Faribault.

The Cowboy Sand Company of Port Washington has been incorporated in New York with a capital stock of \$25,000. The directors of the company are William Titus, Alida L. Titus and Jno. Titus.

The Union Sand & Fertilizing Company has been incorporated at Clarksburg, W. Va., with a capital stock of \$50,000.

The Cary Sand Company has been incorporated at Flanders, N. J. The company will produce sand and the incorporators are L. D. Cary, Gustave Reinberg and Herbert Salmon.

Expert Opinion Concerning the Reliability of Concrete in Fireproof Buildings.

In the opinion of some of the best known experts, a great conflagration is possible in nearly every large city in the country. The chief cause of this is owing, it is believed, to the policy of the owners to cheapen, as far as practicable, the fireproofing and the construction generally.

Richard L. Humphrey, in charge of the division of testing the structural materials for the United States Geological Survey, points out that an earthquake in New York City, for instance, would result in an appalling loss of life and property. The only sure way to remedy grave defects in construction is to enact strict building laws which will compel an observance of approved essentials for fireproof structures. Mr. Humphrey fears it is quite probable that the new San Francisco will be, to a large extent, a duplicate of the former city in previous defects of construction.

Capt. John Stephen Sewell testifies that, in the great fires of recent years, fire tests have proven conclusively that methods of fireproofing now employed are inadequate to stand any real test. In the ma-

jority of cases the steel work is fairly well protected, but it is not by any means what it should be.

For buildings of moderate height, say, up to 125 feet, Capt. Sewell also comes out in favor of reinforced concrete.

Capt. Sewell further states, in order to thoroughly protect the steel frame buildings he believes that all columns should be covered either with four inches of brick work laid in Portland cement mortar and with all interior spaces filled with concrete, or else they should be inclosed in an expanded metal basket and the entire interior filled with concrete so that the minimum thickness of concrete shall not in any case be less than four inches.

The results of recent fires did not, by any means, indicate that either hollow tile or concrete is altogether a success. Commercial methods of applying both materials are shown to be inadequate, but successful results are possible under proper conditions.

From comparative results there seems to be no question that the best fire-resisting material available at present is the right kind of burned clay. Some commercial hollow tile work is made of good material. As for concrete, there can be no question that good clinker concrete, made of well burned clinkers, Portland cement and sand, is a very efficient fire-resisting material. It is better than anything except the better types of burned clay products, but the form in which clinker concrete is commercially applied is, on the whole, no better than the flimsy hollow tile work with which it competes; in fact, it is not certain that it may not be worse.

A very serious, if not the greatest trouble of all, lies in the fact that so little attention is paid to protecting the exterior openings in a building. A light metal shutter combined with a window sprinkler will probably resist quite a fierce fire for a long time. A more thorough precaution for outer openings is some form of rolling steel shutter or preferably with a shutter composed of sheets of steel sliding in very deep rebates in the walls.

Prof. Frank Soule states that the damage inflicted upon San Francisco from the direct and immediate effect of the earthquake was small, but the subsequent effect was to paralyze the water supply and thus render impossible the extinguishment of the resulting conflagration.

Prof. Soule declares that high, steel frame office buildings, properly braced, will safely endure a quite severe earthquake. Minor improvements will produce a perfect structure.

Concrete and reinforced concrete structures are given a high place in the estimation of the experts, who believe that they are as well adapted to withstand earthquakes or fire as any other type of building. There were at San Francisco very few structures of this kind, but these few behaved well during the catastrophe.

At present the sentiment is to limit them to a height of six or eight stories on account of their experimental character. It is agreed that the columns should be reinforced with steel and braced together wherever possible.

Prof. Soule, referring to the interior of buildings, states that wooden floors have proven to be dangerous and objectionable, but in some instances noncombustible wood may be used for them and for the interior trimmings. Metal trimmings, doors, windows, sash and casings, together with plate glass, or, better, wire glass, may confine a fire to a single room.

San Francisco's experience recommends that wells and elevator shafts should be guarded by brick or reinforced concrete walls, fitted with double metal rolling doors bolted to the walls to allow for expansion, or with automatic sliding doors and wire glass partitions.

Concrete floors with metallic mesh reinforcement are strongly recommended for strength and fireproof character.

Capitalists and owners must understand that perfect fire protection for structural steel is necessarily expensive. Any so-called fireproofing that is cheap and flimsy is a delusion. The application of an effective method insures permanence of the structure and at the same time is a great reducer of the rates of insurance.

Building New Crusher Plant.

The Ohio Marble Company of Piqua, O., is building a new crushing plant which will have largely increased facilities for handling its growing business. Instead of hauling the stone from the quarry by team to the crusher, it will now be elevated by means of small cars over a track to the mouth of the crusher, an improvement which will be a great time-saver.

Articles of incorporation have been filed by the Roswell Cement & Plaster Company of Roswell, N. M., showing a capitalization of \$1,000,000. The incorporators include F. W. Wilsey of Chicago, D. G. Hall and G. A. Richardson of Roswell.

New Combustion Process Highly Commended.

(Concluded from page 29.)

On the way back to town Mr. Ash and Mr. Newton got into a discussion on farming about the plants growing in the near-by field. Now, Mr. Connell is one of these tall fellows who never say very much but do a whole lot of thinking, so they could not draw him into the discussion, but Mr. Robertson, who had once raised a sunflower, thought he knew all about the subject, and rendered a decision that the plants, which looked very much like potatoes, surely must be and were pineapples.

We finally arrived in town and were invited into a place which looked very much like what is called a power house or some other kind of an emporium. Now the walls of this place were decorated with all kinds of fancy figures and pictures and inscribed with what was presumably German. Of course Mr. Weiler raised an objection to the place the first thing, because we needed interpreters. We didn't see why he had any kicks to register because once upon a time Col. Cobb of the National Lime Association asked Mr. Weiler why Milwaukee did not invite the association to meet in the Cream City. Before replying Mr. Weiler counted noses and found that the association had so many delegates that it would be impossible for him to furnish each one with an interpreter during his stay, consequently there was no invitation forthcoming. Such a statement coming from a Milwaukee man in a small and innocent town like Sheboygan was ruled out of order.

In the rear of this place is one of those German restaurants which everyone loves, not only for the quaint dishes they serve but the cleanliness and the genial atmosphere which always pervades the place. We thought that up till this time Mr. Fleischer had been an admirable entertainer, but as a host he has no equal. Here we were joined by Mrs. Fleischer and Miss Roth and sat down to a repast long to be remembered by all of those who participated. There was enough food to feed a regiment. Of course it was all washed down by Sheboygan's finest brew, and finally when we pushed back our chairs with good weeds and listened to the stories that went the rounds competition was forgotten and universal brotherhood prevailed.

The talk turned to lime and the plant recently visited. Mr. Mangelndorf of the Combustion Utilities Company gave some very interesting and valuable statistics on the cost and other points covering the subject, and the time was taken until the train arrived. We were all bundled into an automobile and rushed off to the depot, where we scattered, each for his home town, voting Mr. Fleischer a royal host and having seen something really worth while in the completion of modern progress as far as the burning of lime is concerned.

Plant Soon to be in Operation

The Nevada Lime Company, incorporated for \$250,000, expects to have its new plant, three miles west of Wabuska, Cal., ready for operation very soon. This company has several stretches of fine blue limestone and the site of its new plant contains rock which will produce some of the best lime ever produced in California. The plant will consist of steel kilns lined with fire brick so that they will be perpetual. Oil will be used for fuel and each of the four kilns will have a capacity of about twelve tons per day.

Big Florida Lime Company.

OCALA, FLA., July 8.—J. M. Meffert, president and general manager of the Florida Lime Company, notifies us that his company has been consolidated with the Ocala Lime Company. Capital stock is \$75,000. The company is operating two plants at Ocala, one near Kendrick, Fla., one at Lowell, Fla., and has in course of construction six new kilns at Zuber, near Kendrick, to have a capacity of fifty barrels each.

The Canyon Lime Company has been incorporated at East Las Vegas, N. M., for the purpose of manufacturing lime. Incorporators are F. H. Pierce, J. H. Stearns and G. A. Fleming, all of East Las Vegas. Capital stock is \$100,000.

The sewer pipe and brick plants of the Pittsburg-Buffalo Company are being operated to their fullest capacity and are turning out about 60,000 brick per day. They recently completed an order for 3,000,000 brick for the Carnegie Steel Company and have orders on their books for a total of nearly 1,000,000,000 brick.

The Pennsylvania Clay Company, Allston, Pa., has been awarded one of the largest contracts for fire brick ever placed in that district. They are to furnish 1,700,000 brick for the Jones & Laughlin Steel Company.

Cement Workers of Nature Land.

(Began on page 26.)

baked adobe that he can find. Masons, when building a foundation for a dwelling, find it easier to blast this adobe matter out than to pick and shovel it.

The spider starts his excavation, and just how he does it I don't know, except that when he gets through you find he has made a hole eight or more inches deep and nearly an inch in diameter. Commensurate with the size of the spider this excavation is more than equal to one of the great caissons under a skyscraper.

He has no steel tubing to let down to keep out moisture during the rainy season, but he saturates the immediate surface of the bore with a cement that, I imagine, is self-made, and which guarantees against moisture.

The bore finished and cemented, he now turns it into a neat, snug home by lining it with the softest and silkiest of pearly downs, a sort of strong, fibrous, silk paper lining.

To excavate that flinty adobe must have been an undertaking that would equal a workman digging a well in sandstone, or even clay, with his hands and teeth. I presume the workman might succeed on the job in time, if his teeth and fingers held out. So without pick or spade or steam drill one little engineer has worked wonders with his claws and teeth, perhaps.

His home, nice and smooth and deep and damp-proof and warm, completed, he must build a door for it. Now this is not to be an ordinary long door, but it must be a protective roof as well. It must be a door and yet invisible to inquisitive birds, who look on spiders as delicate tidbits. The door-roof must be strong, too, so strong as to stand against the impress of a prowling coyote or even the heel of one's boot pressed upon it. It must be so strong and well made as to resist the stout and pointed beak of the inquisitive and hungry road-runner.

These are problems, and yet to them is added the feature of invisibility. It takes a trained eye to detect the presence of a trap-door spider's nest. The roof or door is perhaps as big as a 50-cent piece. It seemingly is made by a cement process, the secret of which the spider possesses. The outer surface is in appearance identical with the surrounding ground, even to showing little growths of moss, if moss exists around. Whether the spider plants the moss there or not I do not know, but if moss is present in the surroundings you will find it on the door of the spider.

In mechanics the egg-like body is supposed to be the strongest of semi-spherical construction. Now in making the roof of his house, what does the spider do but have the upper exposed part flat and the interior or inner side shaped like the large end of a bantam's egg. The strongest kind of construction, and this rests in a perfectly arranged rim or rest on the inside of the nest.

The door is a marvel, that is the hinging part of it. Long before Yankees along the Housatonic got to inventing and patenting spring hinges, the trap-door spider knew all about them. By weaving a connection between the bore and the door he has made a spring hinge superior in every way to any ever made by man, and when it slams the door to you can search for a crack or crevice with the finest pen-knife and not find it. Why this spring hinge? When a trap-door spider makes a run for home, as a rule, there is a good reason for it, and he means business, so much so that when he reaches his hole he must virtually pull it in after him. When a road-runner is after a spider there is some sprinting doing. Were the spider to have to take the time to carefully close his front door, that second of delay might mean death to him and dinner for the road-runner. So what does the spider do but spin a slight cable that holds the door open when the spider is foraging, and so arranged that as the spider enters his home it is broken and quicker than a camera shutter the door flops to.

Now so much for the caisson builder for the concrete foundation.

I sat on a friend's porch one day and was surprised at the familiarity and tameness of a flock of martins who darted around and around the house, across the piazza and at times all but brushed our faces with their wings.

I did not visit my friend again for some weeks, and when I did I saw, under the eaves, adhering to the flat board just under the roof, a long succession of nests. Now these nests were not the ordinary mud-concrete nests that one sees on barns and elsewhere but were beautiful examples of what seemed impossible engineering in concrete masonry.

The material used was a small pebble about the size of a well-grown marrowfat pea. The swallows began by putting a dab of cement on a pebble and sticking it to the flat board. Where's the mason who can put a dab of cement on a brick and make it hold for a flat wall?

That's what the swallows did; and they kept doing that, more pebbles and more cement, building them out and then curving the nest until it was finally completed, a thing of consummate beauty made up of pebbles all of a size and as neatly cemented together as one could wish.

But the whole weight of the nest must have pulled against the first row of pebbles plastered against that flat, perpendicular surface. It was to me a wonderful exhibition of concrete masonry.

And then the swallows laid their eggs and reared their young, and not a single nest gave way under the load.

How would an engineer go about building out a dormer window against the Flatiron building, using no foundation jutting out from the frame of the building and relying only on the adhesiveness of the cement to hold in place his brick, or cubes of granite? Yet that was what these little cement-workers did and never fell down once. It was marvelous.

Our engineers have much to learn from Nature and her little workmen. Could our engineers equal this construction we would have beautiful, roomy houses standing right out from the face of the Palisades without a support of any kind further than the cement that held the bricks or blocks of stone together.

So when we look at a foundation going in or a skyscraper going up, or watch them string the spidery cables of steel across a bridge, we gape and stare and wonder at what man has wrought. But, on the other hand, we turn to the little denizens of the nature world and see feats of engineering performed that, when appreciated, make our great engineers look like the proverbial 30 cents.

What the Fire Protectionists Want.

The National Fire Protection Association held its eleventh annual convention in New York recently. The Committee on Cement for Building Construction submitted a report of considerable interest, which was approved of and the committee continued for further investigation. The report says in part: "The National Board of Fire Underwriters, through its Committee on Building Construction, has recently issued a revised edition of a model building code and is urging its adoption by municipalities throughout the country. The section (110) of this code referring to reinforced concrete construction has been somewhat revised and is submitted herewith as being as practical and acceptable a specification as the present state of the art will permit. It is, of course, expected that in time experience will necessitate modification or amplification of this standard, but your committee is unable to see any probability of sufficiently important developments in the near future to warrant further delay in the promulgation of such rules as experience has already proven wise. There are three general features of this specification which we feel warrant especial emphasis, features which experiences of the past year or two particularly have amply proven as being those always likely to need the most careful consideration on the part of all concerned.

Design of Reinforcement.

While this is a point on which there is more difference of opinion between engineers than any other, the specifications here outlined have been drawn by eminent authorities, and we believe will produce a building safe from all points of view and will meet with as nearly universal approval as any specification which might be devised at present, and at the same time are sufficiently broad to accommodate the special features of many so-called "systems." We would also call attention to a point omitted in the specification—namely, that the design of such buildings should be undertaken only by engineers of special training and experience along this line. Some of the alluring advertisements of patented systems of the reinforcement may seem to indicate that the erection of a building using some particular design is easy, and does not require much experience, etc., but the fact is there are many intricate questions which cannot be solved by the aid of advertising text books or stereotyped specifications, and we would urge that the design of a building of this type should only be entrusted to trained engineers of recognized ability in this particular direction, just as would be the case if a steel frame building or bridge of equal importance was under consideration.

Insulation of Steel Reinforcement.

This part of the report says that it is their opinion that better insulation than one-inch thickness, which present practice generally provides, is necessary. The San Francisco fire has amply demonstrated the need of heavier insulation. There were thirty-one buildings involved in this great conflagration, having more or less concrete construction. In most of them the concrete was used only for floor panels between steel beams and was made in some cases of cinders, but chiefly of stone. After the fire some of these floors were found in fairly good condition, that is, in case where steel columns and girders supporting them had been sufficiently insulated from the heat to stand up. In most cases, however, the protection of the columns and girders was so thin or frail or of such poor material that the steel members either collapsed or buckled so badly as to ruin many of the floor slabs. There were no buildings involved having reinforced concrete columns, but there were several which contained beams and girders of reinforced concrete, and from these we may draw valuable lessons on this question of the insulation of steel.

First—The Young, or Sellar building, corner Market and Spear streets, was a five-story structure with brick walls and steel frame with intermediate floor beams of concrete, having a most primitive type of reinforcement, which though probably not in favor anywhere at the present time, serves as an extreme illustration of the point under discussion. These beams were in effect reinforcing webs projecting from the lower face of the floor slabs and consisted of a flat rolled steel strap about five inches wide by three-eighths-inch thick, with each end hooked over the upper flange of steel girders and bowed downward so that its center hung about eight inches below the lower face of the slab. On the top of this suspender strap was formed the concrete beam or web. There being no protection for the bottom or edges of the steel strap, of course, it was quickly heated up to a point where it failed to carry its load, and the floor either collapsed or was badly deformed, the amount of damage depending upon the amount of heat in different localities. The Hall of Justice was of practically the same construction and suffered the same damage to a somewhat less degree, owing to the protection of suspended metal lath and plaster ceilings. Construction of this type is probably a thing of the past, and would not be recognized as worthy of the term reinforced concrete. It is cited here, however, to illustrate the point that steel reinforcement needs adequate insulation.

Second—The Johnson building, corner of Minna and First streets, a five-story brick-walled structure, occupied for harness and leather goods store. In this case the columns and main girders were of steel, but there were numerous intermediate floor beams of so-called reinforced concrete, although the reinforcement in this particular case seems to have been hardly worthy of the name. Instead of a well-selected type of steel bars made for the purpose, it seems that a miscellaneous collection of old, twisted wire and various sized rods were used, which, even if in good condition, were not heavy enough to carry their loads with safety, and, furthermore, were located not over one inch from the bottom face of the beams. The contents of this building undoubtedly produced a hot fire, though not at all abnormal for a mercantile house, and the result was the collapse of a portion of the building, and such a serious cracking and bending of most of the beams and floors as to render them valueless for further use. Bad design and improper insulation both contributed to the serious failure in this case.

Third—Pacific States Telephone and Telegraph Company's main office building, on Bush street. A brick-walled steel frame building, with flat gravel concrete floor slabs between beams. In the roof construction were a number of small-sized intermediate beams of reinforced concrete, having their steel members imbedded apparently about one inch from the lower surface. The upper stories of the building were filled with supplies of various kinds, and the heat was naturally severe in these upper stories, including the one immediately under the roof. These concrete beams were badly deflected, one of them falling entirely. In this case the steel columns throughout the building were insulated by three inches of stone concrete, and, to the best of our knowledge, were not themselves injured, although the concrete covering was naturally weakened for some distance from the surface and will doubtless have to be replaced.

While we are not prepared to submit a detailed standard for the manufacture and use of hollow blocks, and even doubt the necessity for attempting to regulate very closely the manufacture of a type of building material which can only be recommended for low credit in fire resistance, the fact must be recognized that the material is being very extensively used, and commercial necessity demands that it be given some definite grade as compared with other building materials. We, therefore, beg to state our opinion that a hollow concrete block wall is better than a frame wall for the simple reason that it is incombustible and will withstand moderate fires which would feed upon and destroy wood, but it is inferior to a brick wall on account of liability to breaking from unequal expansion, probability of continuous cracks through wall at imperfect mortar joints and especially on account of present tendency to poor workmanship in manufacture.

The regulation of this personal element of workmanship can only come about in the course of years of experience, and the recognition and control of it from our point of view will have to be left to the individual judgment of various authorities having local jurisdiction. In other respects the highest fire resistance will be found in the block that has:

First—The thickest shell, or being nearest solid (should never be less than two inches thick).

Second—That contains a good brand of Portland cement tested and found to conform to the standards of the American Society of Civil Engineers or similar specifications.

Third—That contains one part cement to not more than four parts sand or other aggregate.

Fourth—Is made with the wettest mixture practicable.

Fifth—Is most carefully cured or aged not less than thirty days before using, during which it is frequently moistened by water spray or steam.

Sixth—Which provides solid blocks for the course on which joists or girders rest instead of allowing said timbers to rest on or hang to the inner side of a hollow shell which may break off.

In conclusion we would recommend the continuance of the committee for the purpose of collecting more complete data on various phases of the subject and reporting tests or experiences of interest, and would urge at the same time that members make a special point of informing the committee in detail of any fires they may learn of involving concrete in any form."

The Waterloo Concrete Roofing Company.

WATERLOO, IOWA, July 16.—The Waterloo Concrete Roofing Company has been incorporated with a capital of \$20,000 for the purpose of manufacturing and selling concrete shingle machines. The officers of the company are F. W. Reisinger, president and treasurer, and C. M. Strayler, vice-president and secretary. They will use the improved Leush patterns for machines, which are well known to our readers.

Side Talk

A Bid for Intelligent Co-Operation.

R. F. Abbe, 136 Liberty street, New York city, says:

Recently the writer was approached by a gentleman representing a prominent mining paper with the request to write an article on tube mills. First I asked to be excused, but afterwards decided to write an article, but not about tube mills. There is something of greater importance to both the builder and the user of crushing, grinding, drying and pulverizing machinery.

I therefore would invite the interested parties of both sides to publish their opinions on the subject of a national alliance between the builders and the users of mills and only wish to mention a few items which will show the immense value of such a combination.

First and most contemptible, the bribing of employees, which has spread to such an extent that one only wonders why the employees do not notice it.

Second, the necessity of education on both sides.

At present the purchaser is of the opinion that the builder of the machine ought to know exactly what his machine can do on a certain material, does not consider that the builder cannot acquire the knowledge even if he had the opportunity as to what his machine can do on the thousands of different materials that are reduced by crushing, grinding or pulverizing machines and men in our branch of business know that the reports from customers differ to such an extent that they are entirely unreliable.

I wish to mention only one instance which occurred in two different departments of one large concern.

We sent a mill to Iowa to grind gluten meal and received the report that the mill was utterly useless for the requirements.

Only six weeks after this report we received another from their plant in Glen Cove stating that our mill was the best they ever saw. As stated before, the papers would prove to be too small for an article which in any intelligent manner would explain all the values contained in a combination of the parties mentioned above.

I am very desirous to hear the opinion and suggestions about the combination and am always ready to assist.

Such a Record Talks.

Medusa Waterproof Compound, manufactured by the Sandusky Portland Cement Co., Sandusky, O., is being used and is specified in the following work:

Exterior plaster of the Coliseum, Niagara Falls, N. Y., to prevent discoloration and efflorescence caused by the spray of the falls. In the Crystal Ice and Storage Company reinforced concrete tanks and the Huguia Ice and Storage Company at Poughkeepsie, N. Y., in remodeling the plant.

The new Baur Bros. bakery at Pittsburgh, Pa., has just been completed and was waterproofed throughout with this material. The material is also being used in the American Car and Foundry Company's plant at St. Louis, Mo., and the Pendleton Investment Company at that point is using it in all concrete residences, being erected by them. It was used in the floors of the Davis estate building in St. Louis with most excellent results.

The new Olympic Club building at San Francisco is having its swimming pool foundations and cellar entirely waterproofed with this material.

Any one interested in waterproofed concrete work can obtain a most interesting pamphlet on the subject published by the above named company.

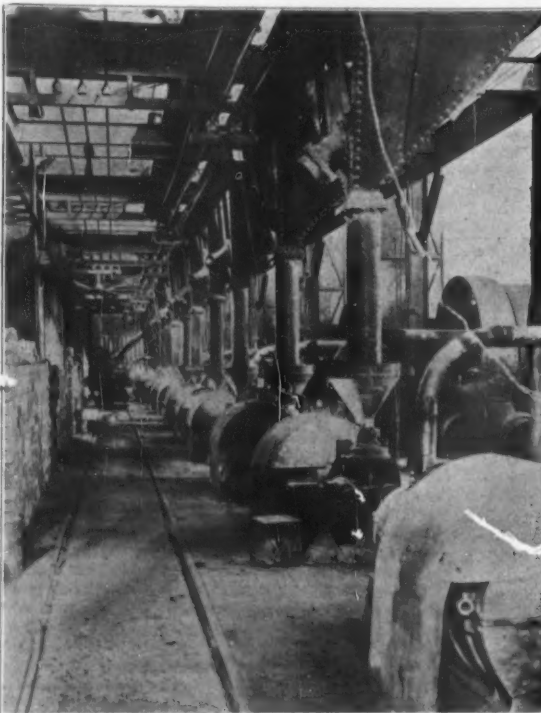
S. W. Shoop & Co., designers and builders of the Shoop Improved Lime Kilns, Altoona, Pa., report that they are having a very satisfactory business this season. In addition to the Shoop Improved 20th Century Iron Clad Kilns already installed over various parts of the United States they are at present preparing material for shipment and erecting plants for the Chemical Lime Company at Bellefonte, Pa., the Canyon Lime Company, at Las Vegas, New Mexico, Kinsey Quarries, Kinsey, N. C., and San Antonio, Texas, and are also in communication with concerns in foreign countries.

The Knickerbocker Company of Jackson, Mich., manufacturers of concrete mixers advise that the Martin Cement Machine Company of Woodburn, Ia., is selling their machines. They sold three in four days the past month. One to the Maryville Pressed Stone Company at Maryville, Mo. The fact that this is a town of about five thousand inhabitants and they have sold three machines here in the past five weeks they consider a good indorsement of their mixer. Their Denver agent has sold forty machines so far this season and their Minneapolis agent has sold thirty-three. Their sales so far for 1907 have doubled the entire year of 1906 and they are highly pleased with the record.

Davenport locomotives have almost come into general use around cement, lime and plaster plants. There are also hundreds of them in use among big contractors, in fact, one contractor, W. J. Oliver of Knoxville, Tenn., uses them exclusively. Mr. Oliver is one of the largest contractors in the entire country and will be remembered as the lowest bidder on the Panama canal.

Among the recent locomotives which the company has sold may be mentioned two which the Casparis Stone Company purchased. This makes twenty Davenport locomotives which the Casparis Stone Company now have in use.

The Chicago Portland Cement Company recently purchased another Davenport locomotive, as well as



KILN HOUSE OF THE UNIVERSAL PORTLAND CEMENT CO. AT BUFFINGTON, IND. (16 PULVERIZERS.)

the Dewey Portland Cement Co. and the Owen Sound Portland Cement Company, of Owen Sound, Ont., Can. Others have been shipped lately to the Michigan Alkali Works, Alpena, Mich.; the Kansas City Portland Cement Company, and the Foundation Company of New York city. This company uses an engine to haul concrete to the excavation. The Davenport locomotives have given general satisfaction wherever they have been used. They are made in all sizes and gauges.

The Ohio Steel Wheelbarrow Company of Toledo, Ohio, have designed and now placing on the market an all-steel wheelbarrow for handling concrete, shown in their advertisement on page 16, which is sure to cause those any way engaged in concrete work to "sit up and take notice."

The company has been engaged in the manufacture of steel wheelbarrows for the past six years and in said time have developed the "most up-to-date" line of wheelbarrows now offered on the market. Their new 1907 catalogue, just from the press, tells the whole story and can be had by any one interested on application to the company.

The American Sewer Pipe Company, East Liverpool, O., is now operating its clay mine on Pennsylvania avenue. It has installed modern machinery and is able to handle its clay more rapidly and with greater ease than before.

Success of the Aero Coal Pulverizers.

An interesting illustration is presented herewith of an extensive equipment of the Aero Pulverizer in the Buffington plant of the Universal Portland Cement Company at Buffington, Ind. The entire pulverizing plant for the sixteen kilns which have constituted the equipment of this plant has been concentrated into a small space in front of the kilns as shown. The kiln material for this use is first run through a crusher, which reduces the lumps to about a 3/4-inch size. Passing from the crusher it is delivered by means of a conveying belt to sixteen hoppers in front of the kilns, beneath each of which is located the pulverizer, each directly connected to an electric motor.

The device consists of an iron casing, to one end of which coal is delivered by a feeding device, which produces a uniform flow of fuel to the kilns. In the casing of the machine there revolve three sets of beaters of varying diameter, the smallest being at the end at which the coal is fed. Each beater or set of paddles revolves in a chamber formed by diaphragms within the casing and the chambers communicate with each other by means of central openings. These beaters are of varying diameters, the smallest one being located next to the point where the coal is fed into the machine, and reduces by impact and attrition the lumps of coal to a much smaller

size. The second chamber receives this product from the first, and in turn delivers its product to the third chamber, this axial movement of the material being produced by means of a flow of air induced by a fan located upon the same shaft, and also contained within the casing of the machine. The air enters at the feed end of the machine and by passing longitudinally through the various chambers removes from each to the next such particles as are sufficiently reduced in size to float in the current of air in that particular chamber. This current is strongest in the first chamber, less in the second and least in the third, so that the reduction of material is progressively accomplished in the three chambers, and finally passes into the fan chamber in a very finely pulverized state. The discharge opening of the fan is connected directly to the front of the kiln by a delivery pipe and the pulverized material is delivered with the air necessary for its combustion. In order that the coal may be pulverized to the degree of fineness necessary for rapid combustion, it has been found inadvisable to draw as much air as is necessary for perfect combustion through the pulverizing chambers, and to admit a further supply of air an auxiliary air inlet is provided between the third pulverizing chamber and the fan, so that the correct proportion of air is drawn through this opening. Both these air inlets are adjustable, permitting a ready variation in the flame produced.

It has only been found necessary to dry coal before using when an extraordinary amount of moisture is present. There is no storage at any point of the pulverized product, thereby obviating the danger of explosion, which is present in the so-called coal-house system, and the troubles incident to the transportation of pulverized coal are avoided, as it is obviously easier to transport the raw coal than when in its powdered form.

The work of this pulverizing method in the last four years at the plants of the Universal Portland Cement Company, at South Chicago and Buffington, has warranted its further employment, and the equipment for the new plant of this company at the Carnegie Steel Works has just been shipped, consisting of eleven machines.

The Aero is particularly desirable where an equipment of only one or two kilns is to be installed, as the investment required is in proportion to the number of kilns, and for a small plant it can be put in with very small initial investment. It is also being applied extensively in kilns for nodulizing fine iron ores, and in smelting and other furnaces. It is manufactured by the Aero Pulverizer Company, 82 Wall street, New York City, to whom your inquiry should be addressed.

Isidore Bandman, Saul S. Meyers and H. N. Holde are the incorporators of the Hard Plaster Manufacturing Company of New York city. The concern is capitalized at \$100,000 and will manufacture hard plaster and other gypsum products.

A. & C. Lime & Stone Co.	15	Carlson Construction Co.	12	Garry Iron & S. Co.	63	Mitchell Clay Mfg. Co.	61	Sackett Plaster Board Co.	78
Avery, Dodge & Brooks Co.	82	Collins Portland Cement Co.	1	Goets, C. W., Lime & Cement Co.	12	Mitchell Clay Mfg. Co.	61	Sandusky Port Cement Co.	78
Co. Pulverizer Co.	17	Century Cement Machinery Co.	60-69			Morgan Construction Co.	12	St. Louis Portland Cement Co.	2
Aetna Powder Co.	7	Cement Tile Machinery Co.	68	Hardsoe Wonder Drill.	21	Mulvey Mfg. Co.	37	Steto Lime Co.	14
Alpha Portland Cement Co.	2	Charles, J. M.	61	Hassock Valley Lime Co.	14	Municipal Eng. & Constr. Co.	65	Sheridan Stucco Retarder Co.	70
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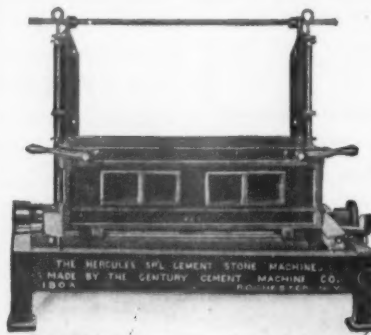
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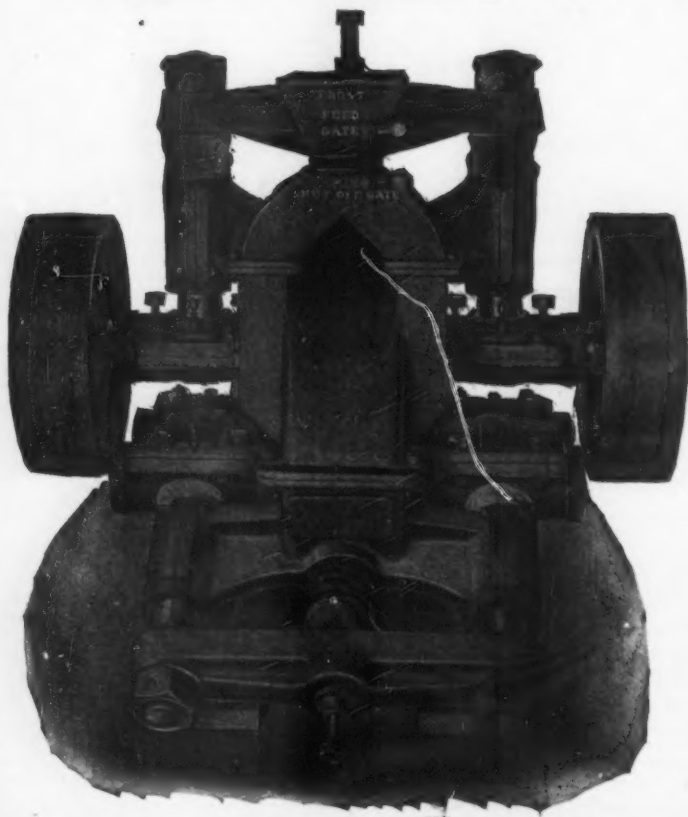
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Takes one inch feed. Grinds to any fineness
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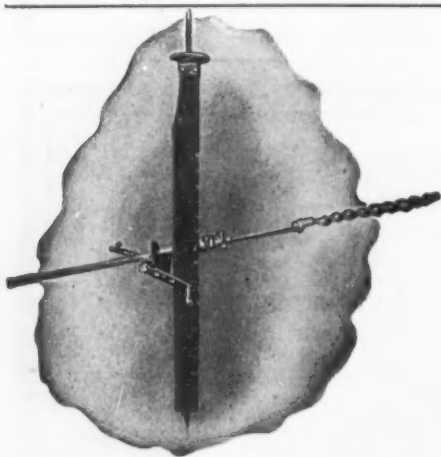
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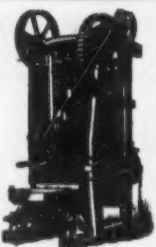
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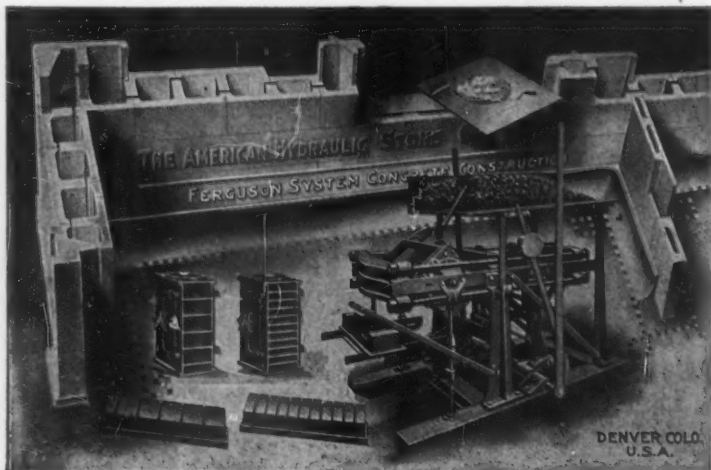
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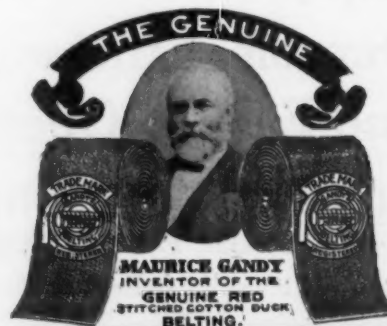
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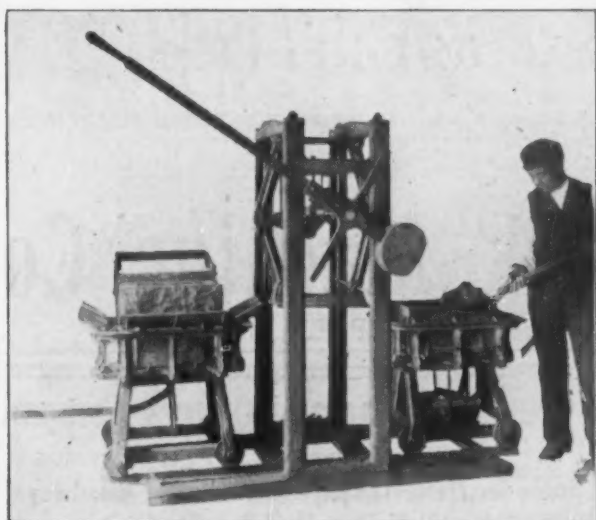
For making sand and cement brick, sand and lime brick, any brick, all shapes and sizes. This machine makes the finest face brick of any machine on the market; every brick is perfect with fine, smooth face and sharp, square edges, every brick a pressed brick. This machine makes plain brick, ornamental brick, molded brick, all shapes and sizes, building blocks, rock face, tool face, panel face, plain face with V joint and brick face, fancy belt courses, corner blocks, combination brick cornice, fine porch columns, porch piers, lattice work, wall trimmings, chimney tops, paving block, archways, wainscoting and tiling for vestibules and hallways, stair steps and risers figured and paneled, for inside and outside stairs, also many figures in terra cotta work can be made on this machine, and made any color by using the chemical coloring.

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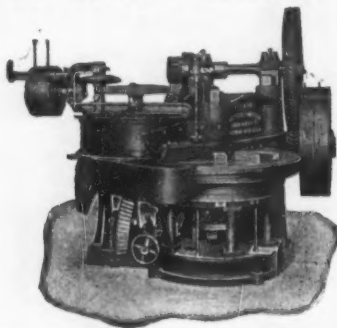
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ON EVERY BLOCK.

600 TO 1000 BLOCKS
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WRITE US FOR FULL PARTICULARS.

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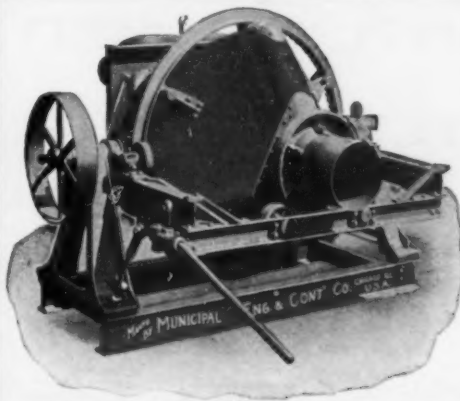
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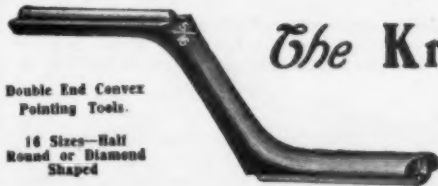
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Grand Rapids, Mich., December 19, 1906.

Gentlemen:—We have been using one of your power mixers for the past month and will say that we are greatly pleased with its operation. We are using at the same time an \$800.00 machine with steam power. The latter is a batch mixer, and we notice every time the men get a little lazy, they don't put in as much gravel as they ought to, which increases the necessary portions of cement. We also notice that in the operation of the batch mixer, four or five laborers are frequently waiting for the batch to be mixed, thus much time is lost; while with your mixer we can load up the wheelbarrows as they come around.

We are also much pleased with the thoroughness with which the cement is mixed with the gravel. It is a perfect mixture and the proportion of cement and gravel can be regulated to a nicety. If purchasers only realized that your machine is more exact in proportion of gravel and cement than batch mixers as they are usually worked, we do not see why you should not sell all the machines that are needed. We also find a great economy in the fuel expense, the coal for the batch mixer costing \$1.00 a day and the gasoline only fifty cents a day. Another economy is in the cost of the engineer. The batch mixer calls for a man at \$2.50 a day to shovel coal and attend the engine. Your mixer requires no such expense. It also takes fewer men to shovel the gravel into the machine because they can work steadily, while with the batch mixer they have to wait until the batch is mixed and emptied every time. We figure the saving in labor and fuel at \$15 per day over the batch mixer, and they are running side by side, and your machine will make more concrete than the batch mixer.

C. H. L.
H. D.

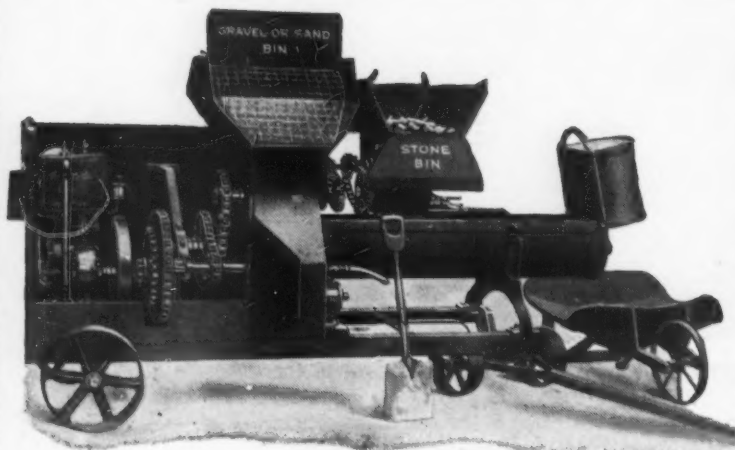
Very truly yours,

GRAND RAPIDS REFRIGERATOR CO.
(By C. H. Leonard.)

Do You want to save that \$15 a day?
If so, write for booklet to

BALLOU MFG. CO. 35 High Street, Belding, Mich.

ALL MIXES GOOD MIXES



The ordinary mixer cannot be depended upon to produce uniform mixtures. It varies from batch to batch. Sometimes too little concrete is used, but more often too much. Insufficient cement means unsafe work. Too much cement—unnecessary expense.

The "Eureka" overcomes these troubles—eliminates them entirely.

Simply set the feeders to the proportion you want, shovel the material into the hopper, and you have a stream of accurately proportioned and perfectly mixed concrete flowing from the mixing barrel continuously.

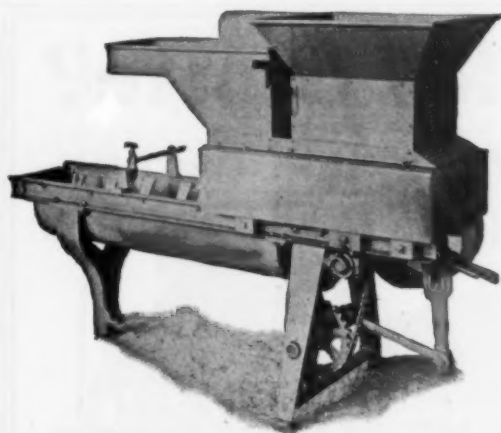
No stops, no waiting between batches; everybody busy all the time. Less help, less expense.

Every particle of mixed concrete uniform. Capacity dependent upon ability to get material to and from machine. Every "Eureka" Mixer sold under a positive guarantee.

Ask for Catalogue No. 3.

EUREKA MACHINE CO.
JACKSON, MICH.

Tell 'em you saw it in ROCK PRODUCTS.



The Standard Continuous Concrete Mixer

"The Mixer that Measures and Mixes."

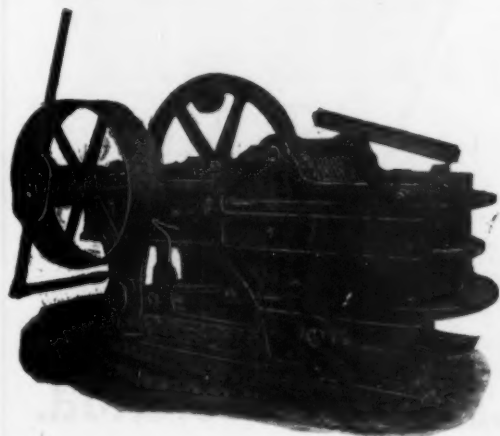
"You fill the Hoppers, the Mixer does the rest"

CONTINUOUS, AUTOMATIC, FEED EXACT PROPORTIONS.

Materials first Dry Mixed, then "Tempered." Output instantly variable from 0 to Maximum at will of operator, thus insuring Fresh Material for each Block. Feeds Sand and Gravel Dry or Wet.

Write for description and prices to

The Standard Machine Co.,
KENT, OHIO



CRUSHERS

for soft rocks, burnt lime, etc.

GYPSUM MACHINERY.

We design modern Plaster Mills and make all necessary Machinery, including Kettles, Nippers, Crackers, Buhrs, Screens, Elevators, Shafting etc.

SPECIAL CRUSHER-GRINDERS FOR LIME HYDRATORS.

BUTTERWORTH & LOWE

17 Huron Street, GRAND RAPIDS, MICH.



The Latest Improvement in Building Material.

A Product in Itself, No Imitation.

"ART MARBLE," "LITHOLITE"

—and—

Concrete Building Blocks.

THE THOMAS

Block and System of Insulated Walls

—combining—

Strength, Durability and Beauty.

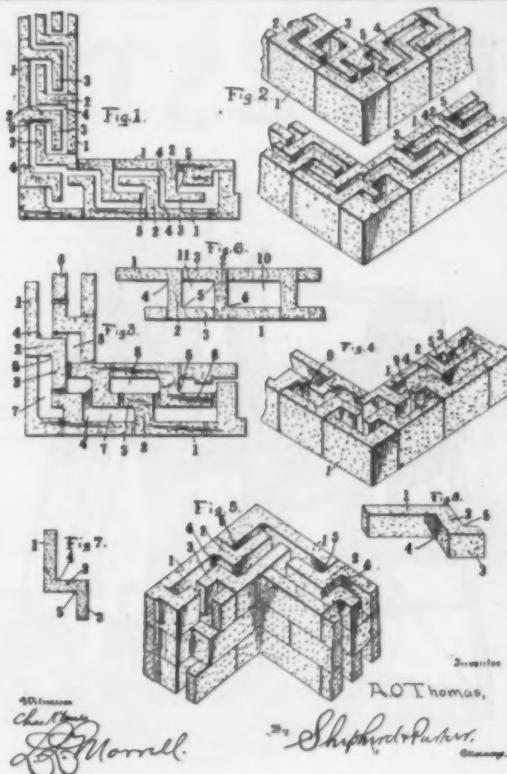
As far superior to common imitation stone as pressed brick is to common, and much cheaper. Our process is based upon scientific principles. Machinery and cost of manufacturing reduced to the minimum.

BLOCKS NON-ABSORPTIVE
WALLS FROST PROOF

AGENTS WANTED

Buy while Introductory Prices
are Offered.

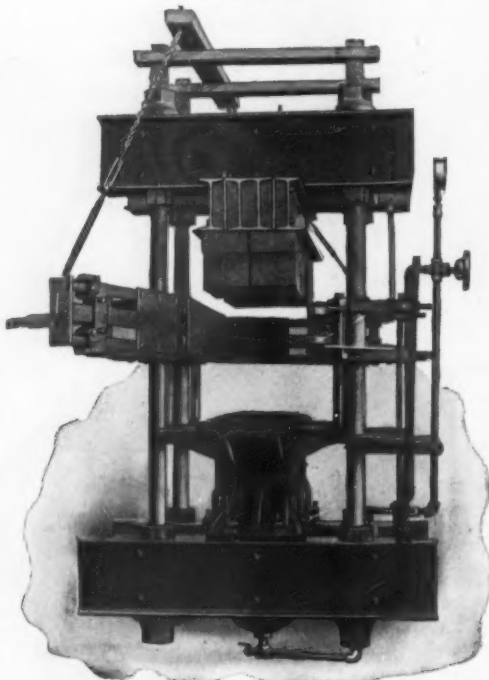
Patents fully Cover System.



KNUTZEN & ISDELL, General Agents, Kearney, Neb.

Do You Want to Make Stone?

END VIEW



SIMPLE, DURABLE

Then you want

Fisher Hydraulic Stone Machinery

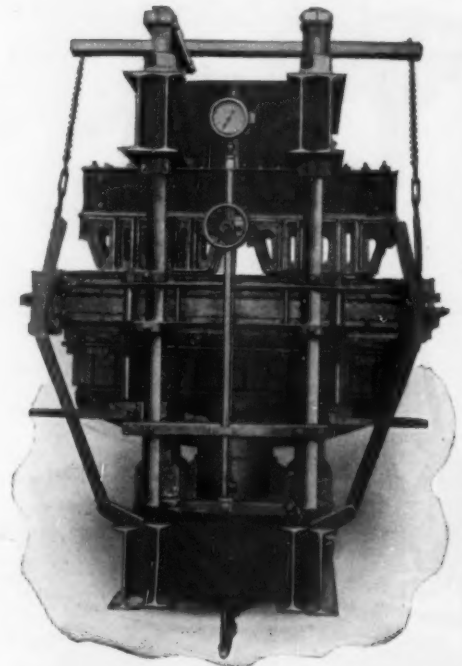
The only perfected system
to-day for making

Genuine Concrete Stone

You cannot make stone without Good Materials, Thorough Mixing, Perfect Condensation, Sufficient Water, Curing. You cannot use plenty of water and condense the concrete mix without FISHER MACHINERY.

Ask for our Catalog K and
let us explain the process

SIDE VIEW



EASY TO OPERATE—POSITIVE RESULTS

Fisher Hydraulic Stone & Machinery Co. Builders
Exchange
Building **Baltimore, Md.**

INVESTIGATE AT ONCE

OUR

Schenk Drain Tile Machine



This is a power machine, the only one in existence, making cement drain tile. It makes seven different sizes of tile, 4, 5, 6, 7, 8, 10 and 12 inches in diameter, 12½ inches long, making just sixteen to the rod. With the aid of four or five men and a 10 h. p. engine this machine will make 3,000 in one day, any of the above sizes.

Let us give you names of parties who investigated this machine, installed one, and are now making money.

For further information write

The Cement Tile Machinery Co.

WATERLOO, IOWA

MANUFACTURERS AND JOBBERS OF CEMENT WORKING MACHINERY

Tell 'em you saw it in ROCK PRODUCTS.

The Century Outfit Makes the Best Concrete Curbing and Gutters



MADE WITH
CENTURY OUTFIT

The handsomest streets in the world have Concrete curb and gutter. They especially ornament Asphalt, Trap Rock or Brick streets. Curb and gutter made with the Century outfit has a "round" edge. It requires no iron or steel binding. It costs one-third less than stone. On account of the "round" edge, wagons cannot injure it. Every contractor ought to have a Century Outfit—good profits can be made with one. Cost is only 15 to 20 cents per inch according to width of gutter. We have published a book which tells all about the Century Outfit, and shows halftone illustrations of streets where Concrete curb and gutters were used. It's free. Ask for curb catalog.

Century Cement Machine Co.

Makers of the Famous Hercules Concrete Block Machine

179 W. MAIN STREET

ROCHESTER, N. Y.

A Story in Two Chapters



THE IMPROVED COLTRIN CONCRETE MIXER

CHAPTER ONE

Chicago, January 21, 1907.

The Knickerbocker Co., Jackson, Mich.:
Please ship by P. F. W. & C. Ry. one Hand-Power Coltrin Concrete Mixer No. 5 on **TEN DAYS' TRIAL**, immediate shipment.
STANDARD OIL CO.
S. L. Wright, Pur. Agent.

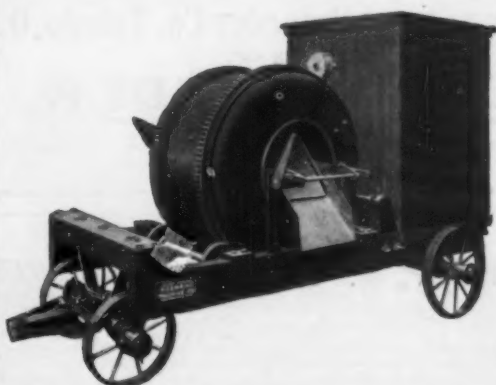
CHAPTER TWO

Chicago, February 23, 1907.

The Knickerbocker Co., Jackson, Mich.:
Please ship by P. F. W. & C. Ry. one No. 5 Hand Power Coltrin Concrete Mixer. **RUSH! When will you ship?**
STANDARD OIL CO.
S. L. Wright, Pur. Agent.

Free trial—satisfaction **GUARANTEED** to you or no sale.
Write us to-day for some interesting arguments in booklet form.

THE KNICKERBOCKER COMPANY
JACKSON, MICHIGAN



KOEHRING MIXERS

Help to build up a concrete reputation for you.

To produce good concrete it is essential to use good Mixers. To select a good mixer, the truest test is comparison of its production.

The drum of the Koehring Mixer is made with rounded edge on both heads and the shovels on inside extend from the cylinder with rounded corners. This means there is not a sharp corner in the drum where materials can lodge. It is the most effective and most rapid Batch Mixer built, is easier kept clean, has a lower charging hopper and discharges quicker than any other.

We build them on skids, on trucks, with gasoline engine, steam engine and boiler, or with motor. Write for illustrated pamphlet B.

508 Germania
Bldg.

Koehring Machine Co.

Milwaukee,
Wis.

Gypsum Machinery

A fine and complete line of Modern Machinery.

KETTLES, CRUSHERS, NIPPERS, ETC.

We are now building the new Plymouth Mill at Fort Dodge, Iowa, the finest mill in the United States.

ASK FOR CATALOGUE.

Des Moines Manufacturing and Supply Company
DES MOINES, IOWA.

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Buffalo Branch: CHAS. C. CALKINS, Manager
322 W. Genesee Street

Elastic in its nature, can be applied with 25 per cent. less labor and has 12½ per cent. more covering capacity than any other similar material.

J. B. KING & CO., No. 1 Broadway, New York

SPECIAL MACHINERY AND FORMULAS

FOR THE MANUFACTURE OF

WOOD FIBER PLASTER, FIRE PROOF-
ING AND KINDRED PRODUCTS

The Ohio Fiber Machinery Co.

We furnish the latest improved FIBER MACHINE, (fully patented), also FORMULAS, on a reasonable proposition. The strongest companies and oldest manufacturers are operating under my contracts.
WRITE FOR TERRITORY.

J. W. VOGLESONG,
GENERAL MANAGER.

Elyria, Ohio.

WHEELING WALL PLASTER CO.,

MANUFACTURERS AND JOBBERS

Wheeling Plaster and Builders Supplies.

WHEELING, - - WEST VIRGINIA.

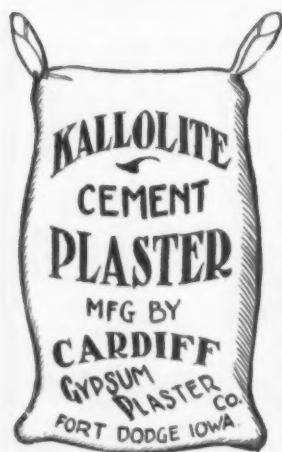
The American Cement Plaster Co.

Make Plaster that Gives Satisfaction.

Try a car and be convinced

We have six mills and can always fill orders

Main Office: Laurance, Kansas.



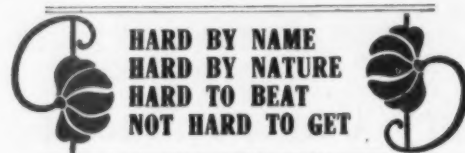
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IS MANUFACTURED FROM
THE PUREST GYPSUM ROCK
FOUND IN THE UNITED STATES
AS SHOWN BY GOVERNMENT
REPORT.

CARDIFF GYPSUM PLASTER CO.
MANUFACTURERS FORT DODGE, IOWA

Plaster! Plaster!

IOWA HARD PLASTER CO.



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AGENTS FOR BISHOP WATER JACKETED FURNACE FRONTS
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The Empire Gypsum Company's new mill, with capacity of 200 tons daily, is in operation and they are prepared to promptly furnish the best quality of Empire Stucco, Empire Neat Plaster, Sterling Wood Fiber Wall Plaster and Excelsior Wall Plaster Sanded.

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THAT'S IT



**Cement Plaster
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The Brand that's Made from Pure Gypsum Rock.

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New Albany Wall Plaster Co.
(Incorporated.)

MANUFACTURERS OF

Star and Wood Fiber Wall Plaster.
NEW ALBANY, IND.

We wish to announce to the trade that we are now running and at the present time, are in position to fill all orders promptly. Those who have used our goods claim it is the finest they ever had.

If you have not tried it, we are sure it would be to your interest to do so.

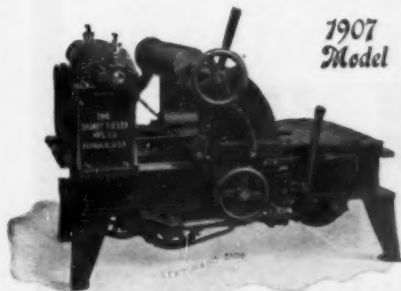
Prices always right and your orders solicited.

NEW ALBANY WALL PLASTER CO.,

Cumberland Phone 408.
Home Phone 137.

NEW ALBANY, IND.

The Leonard Wood Fiber Machine



1907
Model

Has an Automatic, Proportional, Increasing Feed, which keeps grade of fiber uniform from start to finish, and holds machine to highest possible rate of production for the grade of fiber and number of saws. Does not begin with fiber and end with dust, nor fall off in rate of production on each log, from 40 to 80 per cent as do the ordinary non-increasing feed machines. Works logs up to 24x24 inches. No royalty string attached to sale. Pay no attention to misrepresentations of our competitors but write for descriptive circular and terms to

The Shuart-Fuller Mfg. Co.
Successors to
The Elyria Machine Works,
Elyria, Ohio

THE SHUART-FULLER MFG. CO., Elyria, Ohio.

Gentlemen:—What is the very best, cash-with-order price you will make on another Leonard Fiber Machine? We want no other machine but yours. It is all and more than you claimed for it, and is running steady ten hours every day and doing fine work.

Yours truly, GUARANTY WOOD FIBER PLASTER CO., Chattanooga, Tenn

THE FLOUR CITY

"Continuous Air Space" Block Machine

HAS NO COMPETITORS,

BECAUSE IT MAKES:

An Absolutely Moisture and Fire-Proof Block.

A Wall with Continuous Vertical and Horizontal Air Chamber.
A Block with Rock Face, Panel Face, Brick Face and Broken Ashlar Face

Any Degree Angle Blocks, Arches, Water Tables and Fancy Cornice.

The Only Block Having Two Nailing Points Moulded in Every Stone

Will turn out 150 to 200 Blocks,
in ten hours with two common men.

Write us to-day for Catalog, Special Proposition, Exclusive Rights, Territory, etc., etc.
AGENTS WANTED.

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701 Sykes Block, MINNEAPOLIS, MINN.

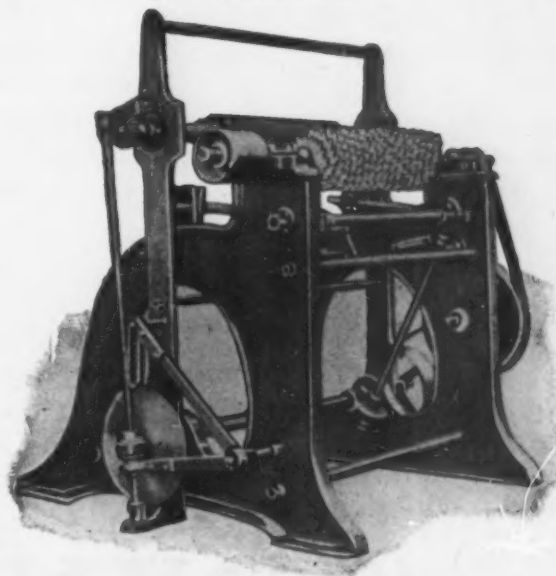
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That Never Fades.

Tried out for 20 years. For Mortar, Brick, Cement, Stone, etc. Red, Brown, Buff, Purple and Black.

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"The Cochran" Automatic Wood Fibre Machine (PATENTS PENDING)



There is positively nothing cheap or shoddy about this machine, either in workmanship or material.

There are no Sprocket Wheels or Chains, no Cone Pulleys or Cog Wheels to break, get out of order and cause trouble. All the power is transmitted with bevel gears adjusted to "run like a watch."

We call special attention to the "speed increasing mechanism" and automatic action of our machine. When the log is reduced to the size of 2 inches the carriage is automatically released, and swings back to place without being touched by the operator, while at the same time the log stops revolving, without interfering with the other parts of the machine.

The log when finished is revolving six times as fast as at the start and all done automatically and continuously.

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Concrete Engineering and Equipment Co.

Butler, Pa.

Greensboro, N. C.

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FOR

CALCINING GYPSUM

NO KETTLES
USED

PLANTS IN
OPERATION

Great Saving in Cost of Manufacture and Quality of
Product Guaranteed.

The F. D. CUMMER & SON CO., Cleveland, O.

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IT'S FINE!"**

Come on in fellows—it's great! It's positively refreshing—the way that new plaster finish sells. You'll be in royal good company, too, for all the live, progressive Material Dealers are selling it.

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The New Plaster Finish

Without Lime—Without Lime Troubles

What do you say, Dealer? WE say, "Come on in—it's fine." The Architect says it's fine—the Contractor says it's fine—saves time and labor and eliminates uncertainties. The builder says it's fine—makes the smoothest, hardest, finest wall face ever—and the Plasterer says it's fine—coolest, creamiest, "spreadiest" finish plaster he ever dipped a trowel into.

Coming in? Write us for "Universal" literature—particularly the little booklet, "Here's Your Finish," and enjoy a sample of the brightest, snappiest, newsiest and most forceful plaster advertising matter that a Material Dealer ever distributed to his trade. Write us to-day. Address our nearest Office.

United States Gypsum Company

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Cleveland

Minneapolis

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Economy in Building Construction

When you build—whether it be a small cottage or the largest hotel—use Sackett Plaster Boards instead of lath. You will save time in construction, your walls will be more fire-proof, the plaster will not fall, and there will be little or no warp to the trim.

Sackett Plaster Boards come in sheets or slabs 32x36 inches ready to be nailed direct to the studding, furring or beams, presenting a smooth continuous surface to which is applied the finishing plaster to complete the wall, as shown above. The saving in labor makes the improvement not only superior to, but less costly than the antiquated lath and plaster construction.

Sackett Plaster Boards are **not** an experiment. Their value has been proved in **sixteen years of use** where the supply has never yet caught up with the demand. They are used in the greatest hotels in the country, in theatres, apartment houses, churches and residences.

Sackett Plaster Board is an efficient and economical fire-proofing between floors and for protecting exposed wooden surfaces. It is also used extensively instead of lumber as outside sheathing under weather boards.

Carried in stock by **up-to-date building material dealers** everywhere.

Illustrated **booklet** regarding this construction, showing buildings all over the country where it has been used successfully and economically, with **samples**, mailed free on request to any of the following General Distributors:

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CLEVELAND

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Grand Rapids Plaster Co.

GRAND RAPIDS,

MICHIGAN

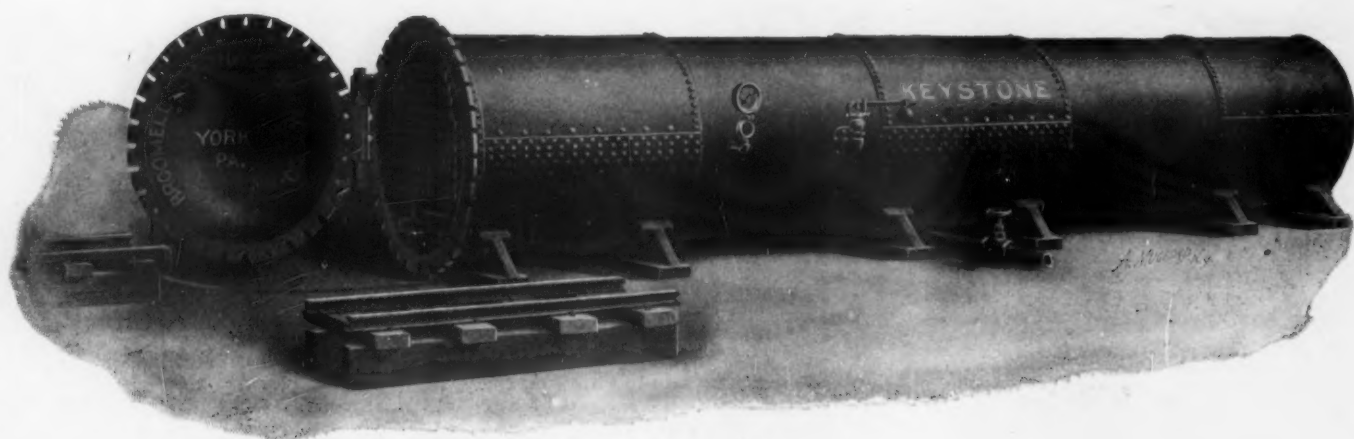
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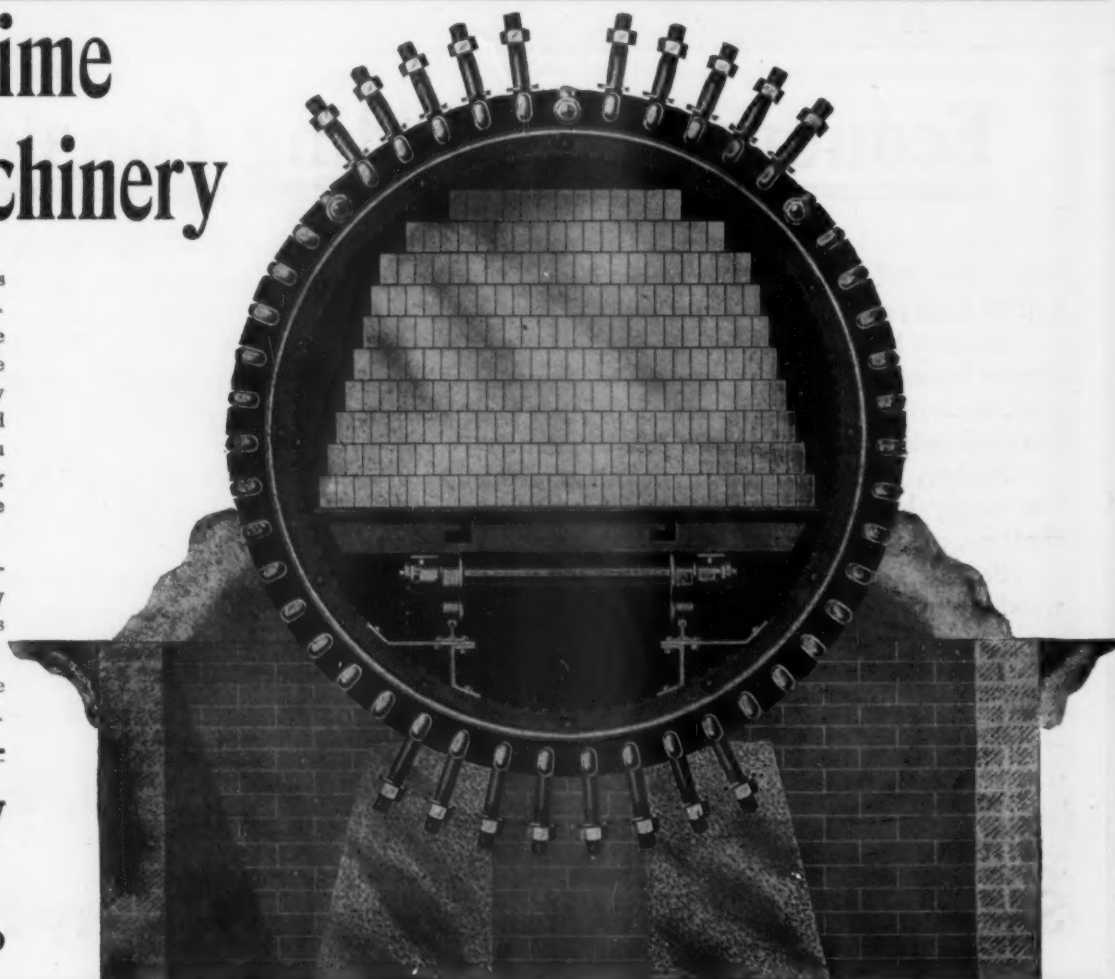
Our Sand=Lime Brick Machinery is at least a little better than any other. We have testimonials to show it. We build it all in our own factory and are sure of its quality. We are the only firm doing this. We will design and equip your entire plant or will sell you parts of your equipment. Our catalog describing and illustrating our full line will be sent upon request.

We also build a full line of machinery and appliances for making Clay Products, Cement and Pottery, Dryers and Dryer Apparatus.

Everything we sell we make. We therefore know its quality to be right.

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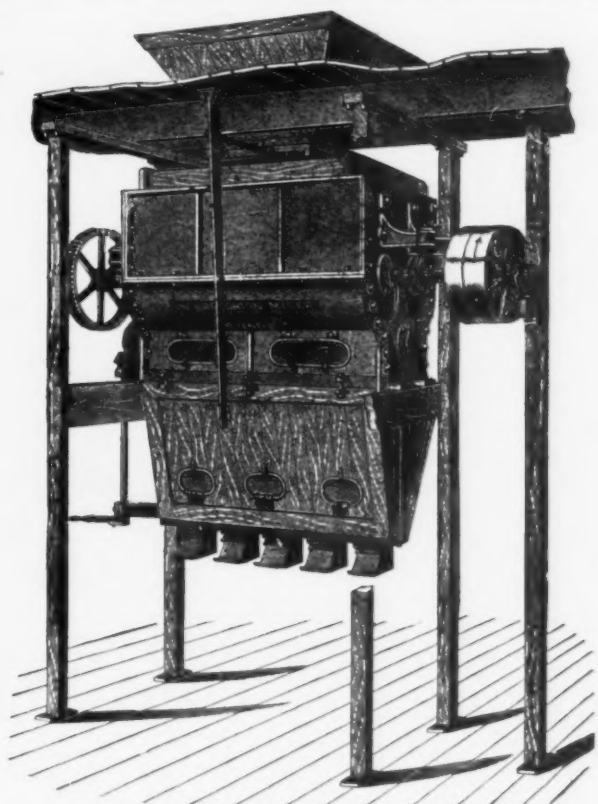
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The most thorough and efficient
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(OF JEFFREY DESIGN)

CONVERTED INTO A PICKING TABLE



(IN SOUTH AFRICA.)

**Elevating, Crushing, Screening, Convey-
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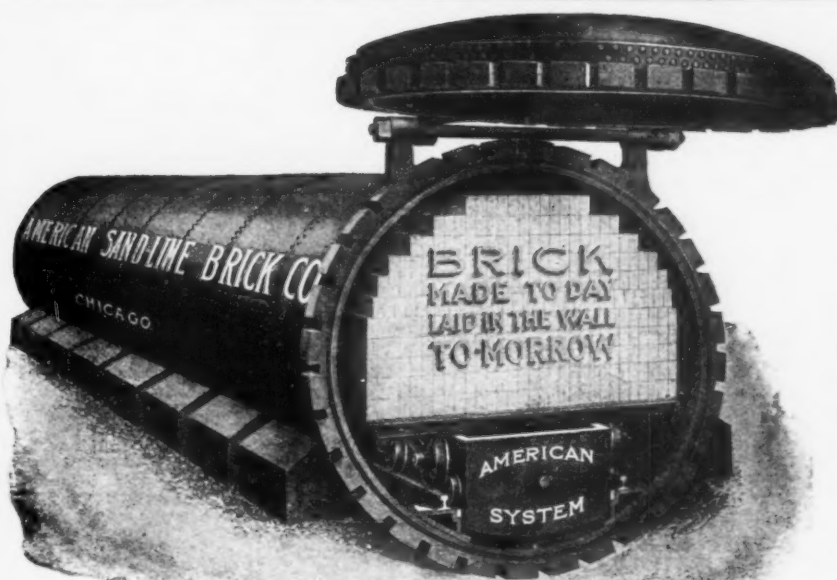
Catalogs Free

Correspondence Invited

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Columbus, Ohio
U. S. A.

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Denver, Charleston, W. Va., Montreal, Can.



SAND- LIME BRICK

We have had more experience in
equipping, starting and operating SAND-
LIME BRICK PLANTS than any other
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STRONGER GUARANTEES.

ALL MONEY REFUNDED if brick made in regular work are not equal to samples submitted. No risks
and no expensive experimenting under our method of installing plants. It is the **only safe method** for
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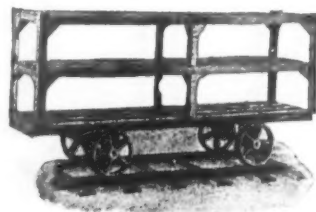
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We Build Cars



For Quarries, Mines, Cement Works, and General Use. Also Dumping Buckets, Stone Carriers or Skips, Wheels and Axles.



SWITCHES,
FROGS,
RAIL,
TURNABLES.



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"Giant" Portland Cement

has been used by the foremost engineers, architects, contractors and builders for the past 20 years in the most difficult and important construction ever undertaken in this country, and has been found to be under all conditions

Strong, Sound, Permanent.

"IMPROVED UNION" ROSENDALE

at long periods shows results equal to the average of Portlands.

"The Test of Time" tells the story. Write for it.

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ATLAS Portland Cement is manufactured from the finest raw materials, under expert supervision in every department of the works and is specified by leading engineers in the United States.

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